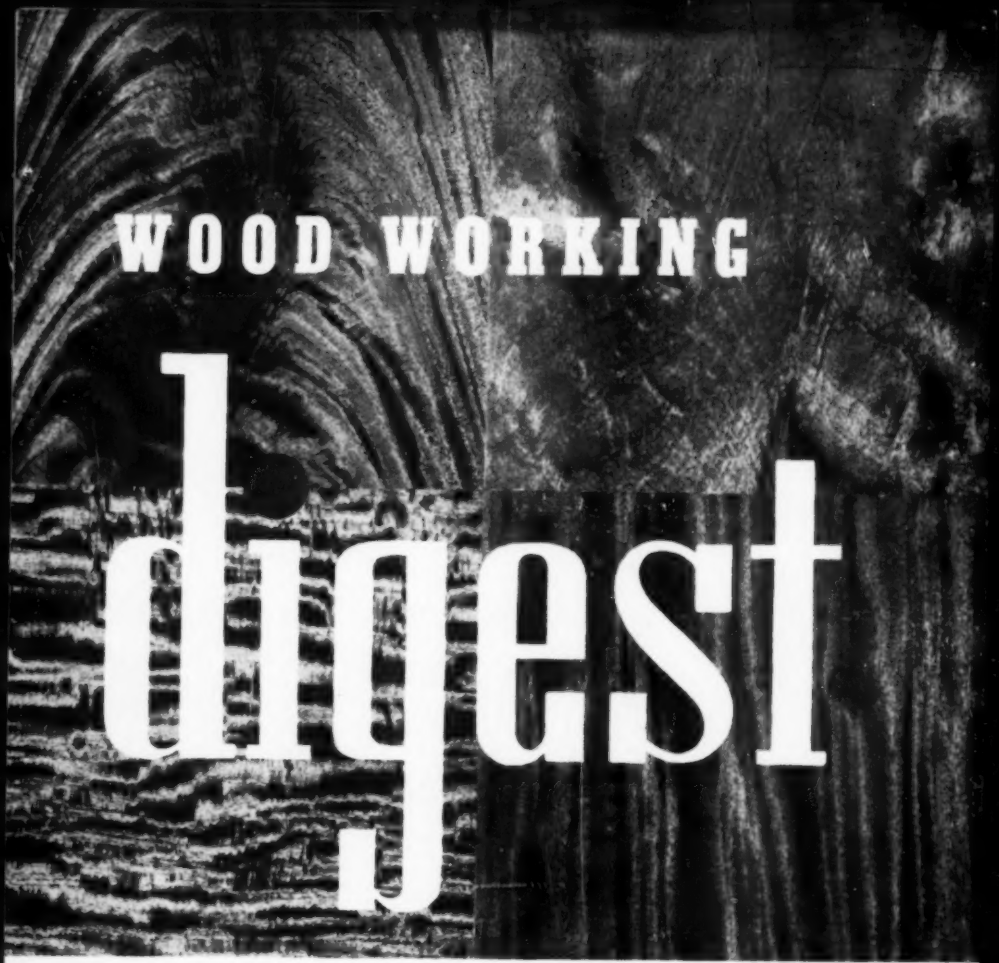

A Hitchcock Publication

Feature Articles 39-79
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JANUARY, 1951

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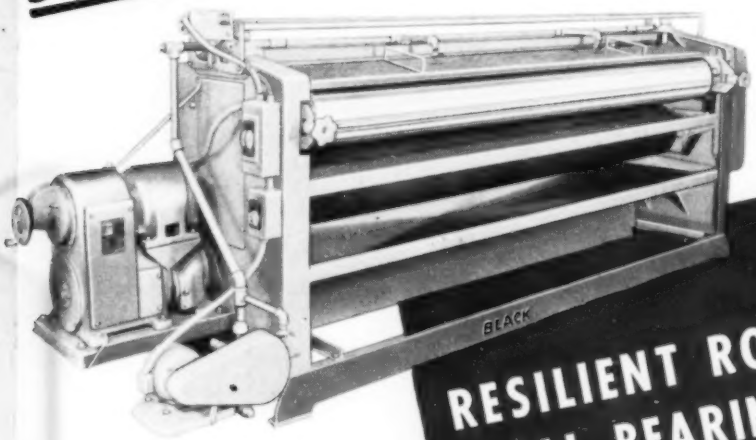
Unmatched in...
SPEED · ECONOMY · ACCURACY



RESILIENT ROLL BALL BEARING GLUE SPREADER

During the past ten years, Black Bros. have built more resilient roll glue spreaders than all other manufacturers

No. 22D Ball Bearing, Resilient Roll Spreader is by far the finest glue spreader for resins, caseins, and other cold glues on the market today. Gluing rolls are deeply covered with fine synthetic rubber, and are specially grooved to control the amount of resins deposited and to conform to irregularities in the veneer. Accurate, heavy duty ball bearings are sealed to keep lubricants in, and dirt and glue out. Doctor rolls are heavily *coated* with a highly polished, non-ferrous surface to accurately control the glue spread and eliminate corrosion. Write today for supplement to Bulletin 11-A.

"If It Is Gluing Equipment - We Have It"

THE BLACK BROTHERS CO., INC.
1000 NINTH AVE., MENDOTA, ILLINOIS

There's an "OLIVER" Sander to save you money on every sanding operation

No. 190 Scroll Edge Sander

for sanding edges of grills, chair backs, etc.

Does more work than four skilled men can do by hand in the same time. Sands inside and outside edges of grills and other scroll work. Used in over 400 furniture plants. Compact, ball bearing, motor driven.

Write for Bulletin No. 190D.

No. 127D Variety Belt Sander

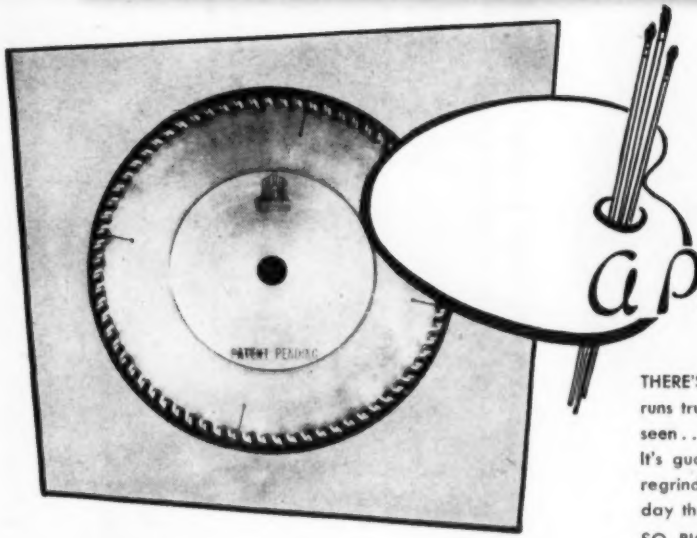
for sanding and polishing curved surfaces

This machine is ideal for sanding all kinds of small and irregular shapes, edge work and flat surfaces such as brush backs, frames, period legs, and medium size built-up pieces of furniture. Belt may be used in vertical or many inclined positions. It is fast and convenient to operate. Belt or motor driven. For full details, write for Bulletin No. 127D.

"Oliver" makes an extensive line of Sanders for woodworkers — belt, drum and disc types. Write for details.

OLIVER

OLIVER MACHINERY COMPANY, GRAND RAPIDS 2, MICH.



A Perfect Work Of Art

YOU DON'T HAVE TO BE an art critic to know that a Big Four carbide tipped blade is a perfect work of art. You may not be interested in what this revolutionary blade has done for others, but you *should* know what it can do for you.

IF YOU HAVE chip-out trouble, if blades over-heat or if distortion plagues you; if your blades fail to duplicate after regrinding, if you get poor factory service and are charged excessively for regrinding; if you're forced to use costly jointing prior to glueing, or if any other problem irritates you then we know you are NOT a Big Four user.

THERE'S NO DISTORTION because it's non-tensioned . . . blade runs true at any speed. It's the smoothest cutting saw you've ever seen . . . there are no chipouts to mar its perfect, smoothly cut edge. It's guaranteed to duplicate its perfect performance after every regrind. On regrinds, blades are ground and returned the same day they are received.

SO, BIG FOUR IS NOT just another saw . . . stamped out and carbide tipped. Instead, it is carefully *turned* out of steel, precision fitted and designed for your job. This effort on our part guarantees you perfect peformance in any cutting operation. Yes, a Big Four blade is a perfect work of art.

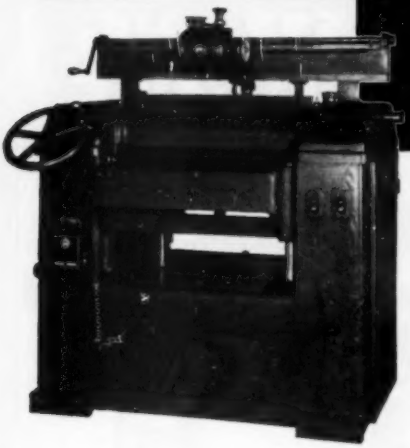
Pat. No. 2528226

FREE LITERATURE will be sent you upon request. Write today: Big Four Carbide Tool Co., Dept. SL-1, 5938 Carthage Ave., Cincinnati 12, O.

BIG FOUR CARBIDE TOOL COMPANY

5932 CARTHAGE AVENUE • CINCINNATI 12, OHIO

DIVIDEND DESIGN gives the PORTER 405 SURFACER 5 Big Advantages



- HIGHER SPEED OPERATION
- PREMIUM CAPACITY
- FASTER ADJUSTMENT
- EASIER OPERATION
- LONGER LIFE

Because of Dividend Design, a Porter 405 Surfacer will handle more lumber at lower cost than ordinary machines. Its extra margin of speed, capacity and strength produces heavier cuts, smoother work and a more profitable operation.

DIVIDEND DESIGN makes the Porter 405 Surfacer extra fast for surfacing at higher speeds. A matched "V" belt drive rotates the cutterhead at 6,000 RPM to assure clean, smooth, perfect work. This high speed is made practical by the newly designed chipbreaker which keeps the machine running free at all times.

DIVIDEND DESIGN permits heavier cuts on a Porter 405 Surfacer. Free and easy cutting action makes possible the use of an increased blade angle without increasing the size of the motor. This means greater surfacing capacity with no rise in power costs.

DIVIDEND DESIGN simplifies adjustment of a Porter Surfacer. The operator quickly varies the rate of feed even as the lumber moves through the machine.

DIVIDEND DESIGN makes it easier to surface pieces of many different sizes and shapes. Individual magnetic controls prevent operation of the feed unless the cylinder is running. All rolls are power driven.

DIVIDEND DESIGN prolongs the life of a Porter Surfacer. It has the extra strength and extreme rigidity of welded steel, ribbed construction. This provides a durability achieved only with excessive weight with cast iron.

Write today for complete information on the advantages of Porter **DIVIDEND DESIGNED** *machinery*

C. O. PORTER Machinery Co.

668 Front Ave., N. W. Grand Rapids 4, Michigan

$395. F.O.B. FACTORY
TABLE $195.00 EXTRA

WRITE FOR FREE FOLDER

Beach Swing Cut-Off Saw shown above is popular Model #605 furnished with built-in 5 horsepower electric motor. Also available with 3, 7½ and 10 horsepower motors. All machines are self-contained units of Steel construction. Swinging arm is mounted on ball bearings and has vertical adjustment of 2".

BEACH

MANUFACTURING CO. • MONTROSE, PA.

Wood Working Digest

JANUARY, 1951 — OUR FIFTY-THIRD YEAR

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ASSURE HIGH SPEED PRODUCTION

BIG CHIEF

The most dependable knife for general purpose high production work.

KNIFE SPECIALISTS SINCE 1891

MOHAWK

Can withstand hard knots in Southern and similar soft woods.

THE **WAPAKONETA**
MACHINE COMPANY
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TORNADO®

cleans up in a jiffy!

PORTABLE ELECTRIC BLOWER

blows away dust, sandings, chips, shavings and debris with powerful blast of air!

Shoots a concentrated, high speed blast of clean dry air that quickly and safely cleans all wood working equipment and machinery. Reduces breakdowns; eliminates fire and health hazards. Low cost. Converts into portable Vacuum Cleaner.

FREE! Bulletin 579

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DELTA
MILWAUKEE®

Sealed-bearing 4-knife cutterhead

gives you
33 1/3%
faster, smoother cuts!

In addition to this big 8" jointer, Delta offers 4 other jointers and 2 saw-jointer combinations to meet every need — every budget!

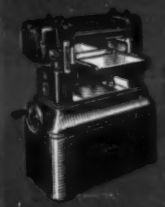
New 8" Delta® Crescent Jointer

—BIG Cuts (8" x ½") BIG Table (60") for BIG Work!

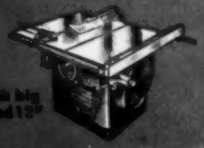
The best buy in the field! *Big capacity* — for 8" cuts, ½" deep rabbets. And above all, the exclusive 4-knife cutterhead that cuts — for *33-1/3% faster, gives better finish! Big table* — a full 60" long for that much bigger pieces! Ask to see it in action. Convince yourself.

See how easy it is to completely equip any woodworking shop *exclusively* with Delta tools — and enjoy the extra convenience of service from one dependable source. And see the extra quality features you get at amazingly low cost in these dependable Delta tools.

Send for details — and plan to equip your shop completely with extra-value Delta tools — high in quality, low in cost!



13" and 24" planers—big capacity, smooth cuts



6 circular saws, with big tables—9", 10", and 12"

3 smooth-cutting band saws — 14", 20", and 26" sizes

4 versatile radial arm saws — full 360° tilt and swing above table

11 drill presses — for every drilling requirement

. . . equip your shop with Delta — the world's most complete woodworking line!

Sold only through authorized dealers — available on easy time payments. Look for the name of your Delta dealer under "Tools" in the classified section of your telephone directory.

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Rockwell

Manufacturing Company

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Tear out this coupon and mail today!

Free... 6 Times a Year!

The Power Tool Journal — 12 pages packed with detailed job data, fully illustrated — handbook of time-and money-saving

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W-63

Leitelt Equipment can save many hard dollars in your plant and yard through more efficient lumber handling. For instance, the Leitelt Power Transfer Car operated by one man moves kiln car loads up to 30 tons with ease and safety. One man does a job that ordinarily takes the time and labor of five to eight men. Look around your plant or yard and see how many men are involved in handling lumber. If you are using more than one man or a Transfer Car it's time to call on Leitelt.

SAVE Lumber Handling Dollars with LEITELT

Write for full information on Leitelt Lumber Handling Equipment. We will be glad to advise the correct installation for your particular lumber handling requirements. Every installation pays for itself.

Manufacturers of Lumber Lifts Car Pullers Power Driven Turntables Subcars and Leitelt Swing Tables

LEITELT IRON WORKS
400 Mill St., Grand Rapids 2, Mich.

Notice in the installation below how one man handles a kiln load of lumber. The power Transfer Car does the actual work, whether it's pushing or pulling a load into or out of dry kilns or storage tracks.

"It's simple, always cuts true and you can't wear one out!"

Users say: "The more you know about cutter heads, the more you appreciate the way a Jones & Orth head is made!"

When you take one apart—check its design and construction — you get a better idea of why they perform as they do.

Take our popular H-Type head for instance, such as the eased-edge model shown at the right. Knives on this head can be used right down to the last $\frac{3}{4}$ inch without change of pattern OR cutting angle!

You'll find a minimum number of parts too, and the greatest precision in adjustments plus a maximum of safety.

No wonder Jones & Orth cutter heads are the choice of so many shop superintendents with a lifetime of woodworking experience!

Find out NOW what Jones & Orth cutter heads will do for your shop! Write today for new catalog, and name of dealer nearest you. Address either our Seattle or Memphis branch!

Need specially designed cutter heads? Let our engineers help! Write us in detail. Prompt service!

JONES & ORTH

CUTTER HEAD COMPANY

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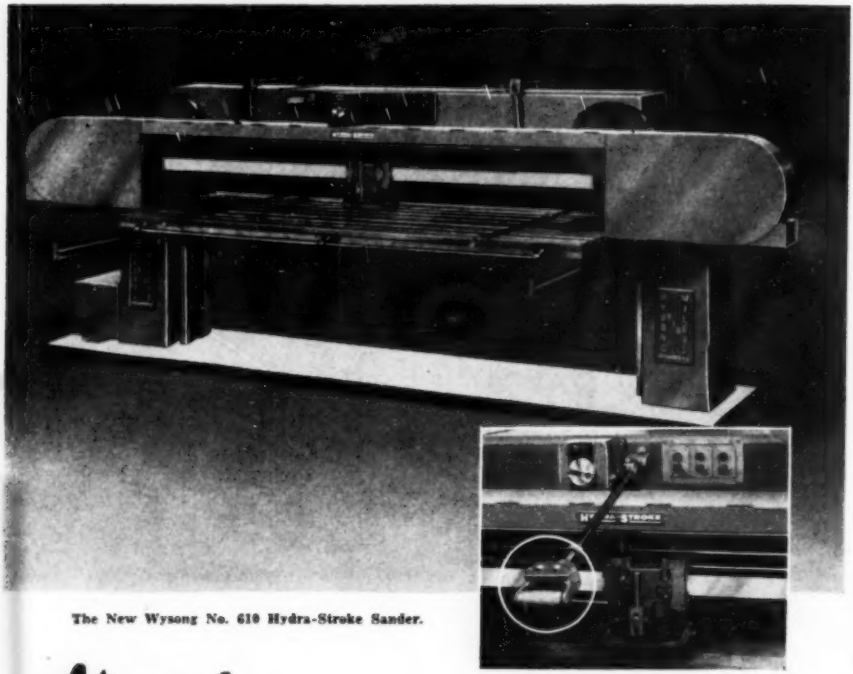


The New Wysong No. 610 Hydra-Stroke Sander.

Push-Button Sanding. Note the new finger-tip control (circled) for changing stroke length.

New!

Faster, More Powerful, Push Button Sander — With a Velvet Smooth Hydraulic-Stroke

THIS IS IT! The rugged, tough, production line sander with the sensitive sanding touch. All previous flat belt sanding production records go toppling wherever the new Wysong No. 610 Hydra-Stroke goes to work.

POWER TO SPARE . . . A powerful hydraulic pump driven by a 7½ H. P. motor delivers more than enough hydraulic power . . . one user reports continuous cross-cut sanding at full speed all day long, without any time loss from kick-outs or overheating . . . Cut faster and deeper without a murmur of protest from the New Wysong No. 610 !

POSITIVE, FAST, STROKE LENGTH SETTING . . . Push buttons at the finger tips on the stroke lever handle, set the length of stroke. It takes only a moment. The operator doesn't even shift his weight or his hands to change the stroke length . . . and when the stroke is set, it stays. No creeping stroke change to waste time and spoil stock edges . . . One user reports that he sands an extra truck-load each day during time saved by this feature alone.

ALL THE SPEED AN OPERATOR CAN HANDLE . . . Ninety strokes per minute at 8-foot setting; 100 at 6-foot setting; proportionately faster on shorter strokes. Your operator will marvel at the way the new Wysong No. 610 increases footage without additional work on his part.

A LIGHT TOUCH by the operator is all that it takes to control the perfectly balanced sanding pad carriage. Polish the thinnest veneer or cut down rough stock without strain. The sanding pad carriage moves on a hardened steel bar with perfect bearing. It can't rock to dig-in and gouge stock.

LESS MAINTENANCE . . . Only two external lubrication points. All other moving parts run in a fully enclosed oil bath. No oil dripping to damage stock and dirty the floor.

IN ADDITION . . . you get all the advantages of Hydraulic Stroke sanding . . . uniform stroke speed for smooth, even sanding and finger valve control of stroke speed . . . plus push-button control to start or stop belt, raise or lower table and start or stop hydraulic stroke. The Wysong No. 610 Hydra-Stroke truly gives you push-button control of sanding machine operation.

YES . . . this is it! The finest flat belt sander ever built. You'll agree when you see the New Wysong No. 610 Hydra-Stroke in operation.

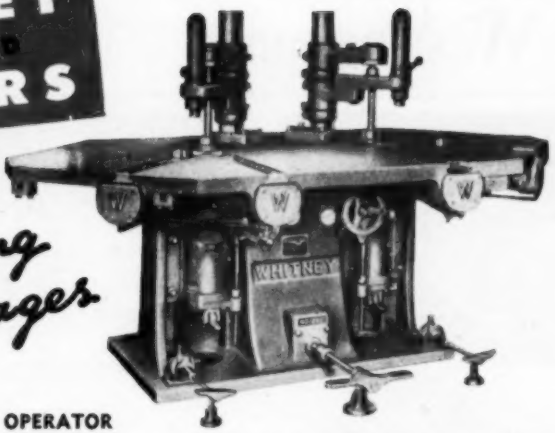
See your dealer or write to the factory for full information.

WYSONG and MILES Co

GREENSBORO, NORTH CAROLINA

WHITNEY POWER FEED SHAPERS

Offer 3 Cost Saving Advantages



WHITNEY DOUBLE SPINDLE POWER FEED SHAPER
MODEL 295
Single Spindle Models also available.

1 **MORE OUTPUT PER OPERATOR**

More production (up to 1000% more) because the spindles are cutting practically continuously. Operators load and unload the forms.

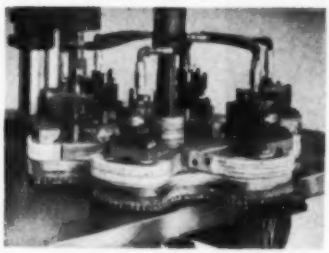
2 **LOWER SHAPING COSTS**

Work from Whitney Power Feed Shapers is uniform, smooth and accurate. Less sanding is required and wasteful handling costs are eliminated.

3 **QUICK CHANGE-OVERS**

Whitney Power Feed Shapers are ideally suited to both long and short runs. Change-overs are made as quickly and easily as in hand shaping.

Whitney Power Feed Shapers handle large or small work. There is a model best suited to your requirements. Write for bulletin describing the different models and showing the forms and how they operate.



MULTI-STATION WORK FORMS

on Whitney Power Feed Shapers mean high production at lowest cost on smaller sized work. These can be furnished with air clamps, as illustrated, or with hand clamps.

BAXTER D. WHITNEY & SON, Inc.

PLANERS • SHAPERS • VARIETY SAWS • MORTISERS • BACK KNIFE LATHES

WINCHENDON, MASSACHUSETTS, U. S. A.

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

A Westinghouse 10-kw, 5-mc RF Generator is installed with a Hart-Union Electro Gluer at Caswell-Runyan. Entire installation is certified to meet FCC regulations.

Westinghouse

RF HEATING

Here's Proof that—

WESTINGHOUSE RF Equipment Produces flatter panels

...saves money on finishing

Pick any point on your production line and we'll show you how Westinghouse RF Generators can save you time . . . money . . . and help produce a better product. The plywood plant of the Caswell-Runyan Division of Newport Steel Corporation at Goshen, Indiana, for instance, replaced their old glue wheel operation with Westinghouse RF Heating Equipment. What happened? Cores are now produced at *double* the rate of the old process. Joints, by all standards, are 100% satisfactory.

More important . . . money is saved in panel finishing because: the use of the RF Generator with the automatic press produces *flatter* panels . . . planers can be set to closer tolerances . . . number of passes through the planer is reduced . . . and planer adjustment is minimized.

The Proof of the Profit Is in the Heating

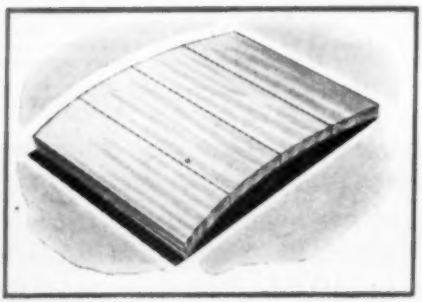
Management-wise . . . Westinghouse RF Heating slashes production costs.

Production-wise . . . Westinghouse RF Heating helps make better products.

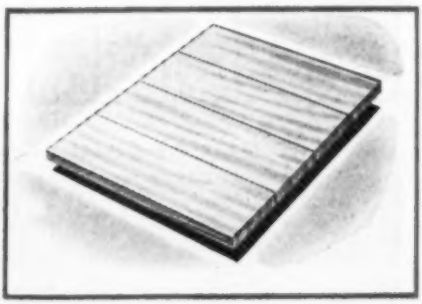
Employee-wise . . . Westinghouse RF Heating means quiet, cool, convenient working conditions.

Call your Westinghouse representative today to learn how RF Heating can help *you*. Or write to Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa., for the free booklet, J-02192-A, "Radio Frequency for the Woodworking Industry".

Eliminate This

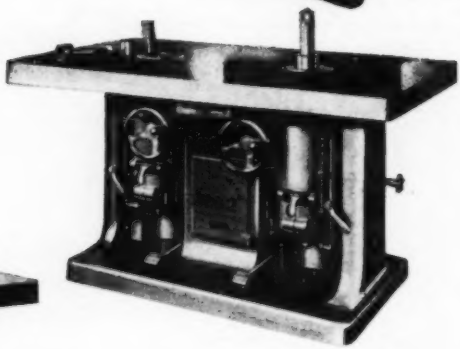


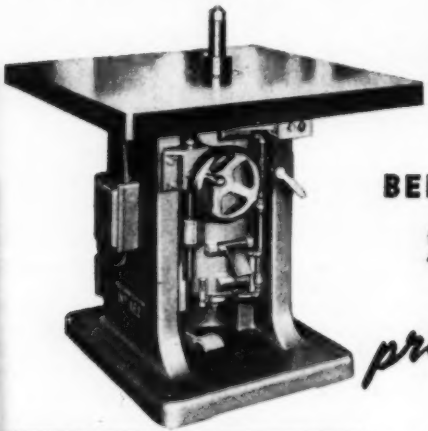
Get This



EKSTROM, CARLSON

The picture at the right shows the No. 262 ECCo Two-Spindle High Speed Shaper. Below is a picture of the No. 162 Single Spindle Shaper. Not shown is the No. 366, which is identical to the No. 262 but with a larger table and greater center distance of spindles.





BELTED, MOTOR-DRIVEN SHAPERS

produce Quality Work at Low Cost...

CONDENSED SPECIFICATIONS			
	162	262	366
Spindle Speed	8500 rpm	8500 rpm	8500 rpm
Number of Spindles	1	2	2
Center Distance between Spindles	—	26"	30"
Vertical Spindle Adjustment	6"	6"	6"
Spindle to Front of Table	18"	18"	18"
Height, Floor to Table	35"	35"	35"
Work Table Size	38"x40"	38"x62"	38"x67"
Motor Sizes	3, 5, or 7½ hp	5 or 7½ hp	5 or 7½ hp

The solid construction and precision workmanship in ECCo Shapers pays off on the production line. Work moves past the knives with little effort on the part of the operator and comes off the machine so smooth and so beautifully shaped that sanding becomes a negligible factor. There are important places in your plant for ECCo Shapers — places where lagging production lines can be speeded up, where important pieces can be whisked out swiftly and accurately at a cost in keeping with the demand of buyers. The experience and know-how gained through five decades of serving the woodworking industry are incorporated into ECCo machines. For knives, use superior Casino Shaper Steel, finished and heat-treated by Ekstrom, Carlson to meet the exacting needs of high speed precision cutting equipment.

Write for Bulletins 162, 262, and 366

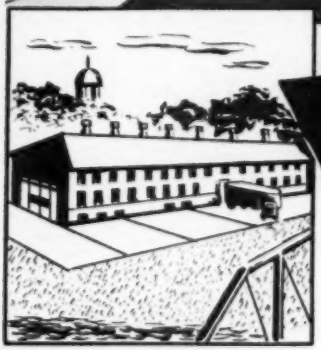
MANUFACTURERS OF QUALITY WOODWORKING MACHINERY SINCE 1904

EKSTROM, CARLSON & COMPANY

1411 RAILROAD AVENUE • ROCKFORD, ILLINOIS

MOULDERS • SANDERS • ROUTERS • SHAPERS • CARVERS • PANEL SIZERS • GROOVERS

Get the right glue for your job from NCC's modern plants at Chicago and Riverton, N. J.



A BUSINESS BUILT BY KNOWING THE *Right Glue* FOR YOUR JOB

From Chicago, from Riverton — and from warehouse stocks conveniently adjacent to America's woodworking centers, you may draw from a balanced line of casein, resin and vegetable glues. Almost as readily, we can give you a formula tailored to your requirements, and thereafter have this glue available to you from warehouse stocks. Contact the National Casein plant nearest you. No cost. No obligation to purchase.

At Chicago and at Riverton, N. J., National Casein Company maintains complete facilities for the formulation and manufacture of both casein and resin glues to the exact — and exacting — specifications of the job for which you expect to use them.

Immediately available from either of these plants are Glue Men—trained and experienced technicians—who will confer with you from the standpoint of your specific glue problem—rather than try to sell you one particular glue formulated to do any and all glue jobs equally well. Let National Casein help you against trouble in the glue room—against glue failures after your product leaves the plant.

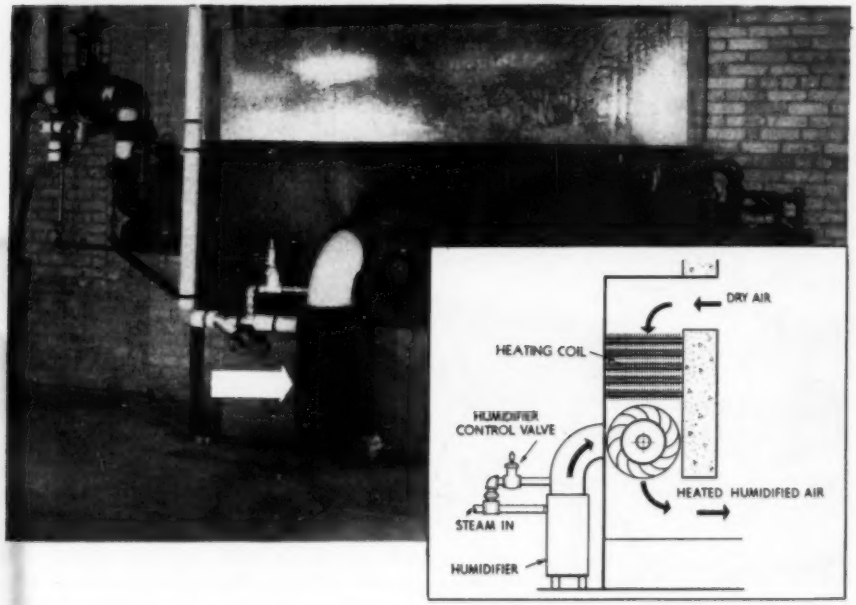
STICK WITH US . . WE'LL STICK FOR YOU

NCC

NATIONAL CASEIN Company

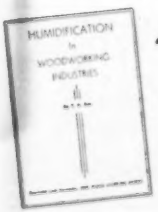
605-19 West 80th Street, Chicago 20, Illinois • Broad & Fulton Sts., Riverton, New Jersey

HOW RWAY FURNITURE COMPANY MAINTAINS MOISTURE CONTENT WITH ARMSTRONG STEAM HUMIDIFIERS



RWAY FURNITURE COMPANY is noted in the industry for its scientific control of wood moisture content as well as for atmospheric control in its finishing department. The part Armstrong Humidification plays at this plant is illustrated here—the humidifier shown automatically adds the correct amount of moisture (in the form of steam) to the circulating air to accurately maintain desired relative humidity . . . neat, simple, economical, dependable.

Armstrong also builds smaller unit humidifiers for installation like unit heaters throughout your plant. The cost is modest, the operating expense is negligible, the benefits are BIG. BULLETIN 1772 gives complete details and list prices. Write today.

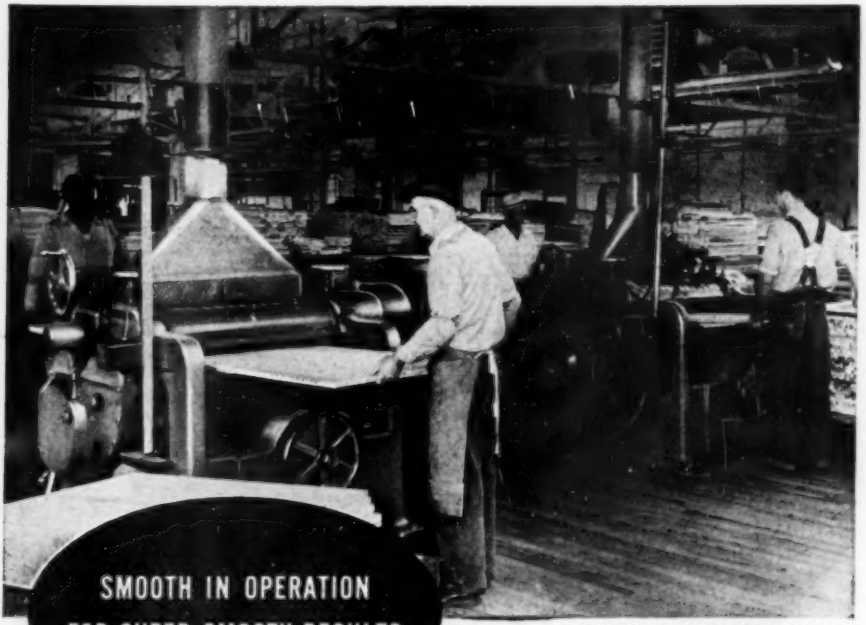


An Article For You

"Humidification in Woodworking Plants"—an 8-page reprint from Woodworking Digest. If you missed it, ask us to send you a free copy.

ARMSTRONG MACHINE WORKS

863 Maple Street • Three Rivers, Michigan



SMOOTH IN OPERATION FOR SUPER-SMOOTH RESULTS

GREENLEE NO. 110 PLANERS IN OPERATION AT WHITE FURNITURE COMPANY, MEBANE, N. C.

. . . Greenlee No. 110 Six-Roll Single Planer

The minute you run a piece of stock through a GREENLEE No. 110, you'll see what we mean when we talk about "smoothness". Finely finished panels can be planed so smoothly that they require little or no sanding.

Yet the No. 110 is a production machine for all types of planing. Feed speeds for rough cuts as well as for finely finished work are available. The entire operation is performed with such ease and speed . . . the finished work comes out with such fine finish and accuracy . . . you'll be able to picture immediately the extra production this GREENLEE equipment can bring to your plant.

Friction, wear, and power consumption are reduced to an absolute minimum by means of ball and roller bearings, and oil-tight housings for the gears, which keep out dust and dirt. Bearings are lubricated by high-pressure grease gun, and the enclosed gears run in oil and lubricate themselves.

In all, the GREENLEE No. 110 Planer brings to all kinds of work . . . whether box boards or finely finished panels . . . unusual production speed, ease of operation, and accurate, smooth results. Write today for details. Greenlee Bros. & Co., 1861 Twentieth Ave., Rockford, Illinois.

MACHINERY & TOOLS

GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING and BORING TOOLS

CONTOUR SANDING

with a National Sander

National's Model 300 two-pad, reciprocating, straight-line action air sander is ideal for contour sanding. Equipped with molded rubber pads, this machine sands curved surfaces as easily as flat. For different operations, seven easily interchangeable pads are available. You will save time in filling, sealing, and rubbing if you use the 300 for all operations. The vibrationless National Model 300 will increase production and give a better finish.

Write for Details Today

NATIONAL NS SANDERS

NATIONAL AIR SANDER, INC.

2820 AUBURN STREET, ROCKFORD, ILLINOIS

History Proves

THE GREATEST CHAMPS REPEAT!

★ REMEMBER *Man O'War?*

Considered by most authorities to be the greatest race-horse in American turf history, Man O' War has a one-sided record of 20 races won out of 21 starts. He won his first race at Belmont Park on June 6, 1919 as a two-year old.

★ REMEMBER *Standard!*

Since 1887, Standard's scientifically engineered dry kilns have set new economy and efficiency records in every type of woodworking plant. And now they're setting a *New Record* . . . a record number of repeat orders from men who know they can eliminate waste and increase their profits with Standard Dry Kilns. Yes, from profitable past experience these men know Standard's internal fan construction and perfect automatic control of heat, humidity, and ventilation is their assurance of uniform quality at lower operating cost.

Whether *you* need a new battery of kilns or a single unit, or whether you want to remodel old natural draft installations for greater output and better drying results, look at the records . . . you'll want Standard!

A FEW OF STANDARD'S HUNDREDS OF REPEAT CUSTOMERS:

M. B. Farrin Company, Cincinnati, Ohio; Iowa-Missouri Walnut Company, St. Joseph, Missouri; J. I. Case Company, Burlington, Iowa; C. F. Works & Sons, Memphis, Tennessee.

Manufacturers of Internal Fan Kilns

Write for illustrated Standard Catalog

STANDARD
Engineers and Manufacturers Since 1887
DRY KILN COMPANY

P. O. BOX 5708 • INDIANAPOLIS, INDIANA

THERE'S NO SHORTAGE of PERKINS COROX

FAST SETTING

LIQUID READY-FOR-USE

ASSEMBLY GLUE

NO COST—NO OBLIGATION

PERKINS GLUE COMPANY
LANSDALE, PENNA.

Rush full information and a trial sample of Perkins Corox to:

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Company _____

Address _____

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CHECK HERE ☐ IF INTERESTED IN RECEIVING *THE PERKINS GLUE LINE* EACH MONTH
Attach coupon to your letterhead.

IN CANADA:
Address the Perkins Glue Company of Canada, Ltd., Kitchener, Ontario

SPEED

Your Production! Raise the quality of Your Planing!

No. 380-A
PLANER

THE PRECISION PLANER

There is NO SUBSTITUTE for Quality! Price alone is never a true gauge of value. Power Planers offer PREMIUM VALUES at standard prices. Eighty-three years of quality manufacturing back our claim to PRECISION WORKMANSHIP. Thousands of satisfied users are our best advertising. The Model 380 Planer is modern—rugged—compact—safe—but, most of all, it's TOPS IN PLANING.

HIGHEST QUALITY SINCE 1867

Planers - Tenoners - Planers & Matchers
Resaws - Band Saws - Power Feed Rip Saws

L. POWER & CO.
2823 Oakford St.
Philadelphia, Pa.
Manufacturers of POWER Machinery Since 1867

Models to suit . . .

EVERY PURSE *and* PURPOSE!

HIGHLIGHTS OF THE JW-250 *Shown above:*

Extra large tables — solid or sliding section. 43-inch ripping capacity. No build-ups required for working large parts.

Will accommodate saws up to 20" dia. — cut through 6 inches of stock.

Accommodates dado heads up to 4 inches wide.

Equipped with left section sliding table (ball bearing), if desired.

Dust-free, cool-running motor (flat top for greater sawing capacity).

Absolutely accurate tilting mechanism with automatic take-up for wear.

Synchronized brake pedal and push button control. Pressure lubrication, dust arrester, finest gauges, ripping fence and many other outstanding features.

REGARDLESS of the size or nature of your operation or the size of your budget, there's a Tannewitz Tilting Arbor Mitre Saw Bench that will fit your requirements exactly and give you the greatest dollar for dollar value obtainable

In addition to the JW-250 — top model in America's top line of Mitre Saw Benches — there's the others in the "J" series of Mitre Saw Benches: the "J-250" with standard size top, the "JS-250" similar to the "J-250" but having a sliding left section top; the moderately priced "XJ" series with five table variations to promote the maximum of efficiency for each and every production set-up, and the "U" series for those who want tilting arbor mitre saw benches at the lowest price consistent with quality When you buy a mitre saw bench it is wise to get a "TANNEWITZ." For more than 50 years this name has been synonymous with the finest in sawing equipment and recognized as such throughout the nation. Write for bulletins We will be glad to aid you in the selection of the best machine for your particular requirements.

Tannewitz QUALITY

SAWING MACHINERY SPECIALISTS

THE TANNEWITZ WORKS

GRAND RAPIDS, MICHIGAN

Bahnson for MOISTURE CONTROL of Dimension Stock

WITH CONTROLLED HUMIDIFICATION

Stops End Checking

Prevents Warping

Eliminates dimensional variations in precision manufacturing

Humidification systems may consist of a single humidifier or may require a number of properly located units. In either instance, The Bahnson Company, with more than 40 years experience in the industrial field of air conditioning, is qualified to study your requirements and recommend the necessary humidification equipment with fully automatic Bahnson controls. Bahnson systems are designed for maximum performance and efficiency with minimum cost and maintenance.

Write for Bulletin 2A

Bahnson Company

ENGINEERS AND MANUFACTURERS

WINSTON-SALEM, N. C.

Military Specifications for glues and plywood

☆☆☆☆ recommended materials to comply

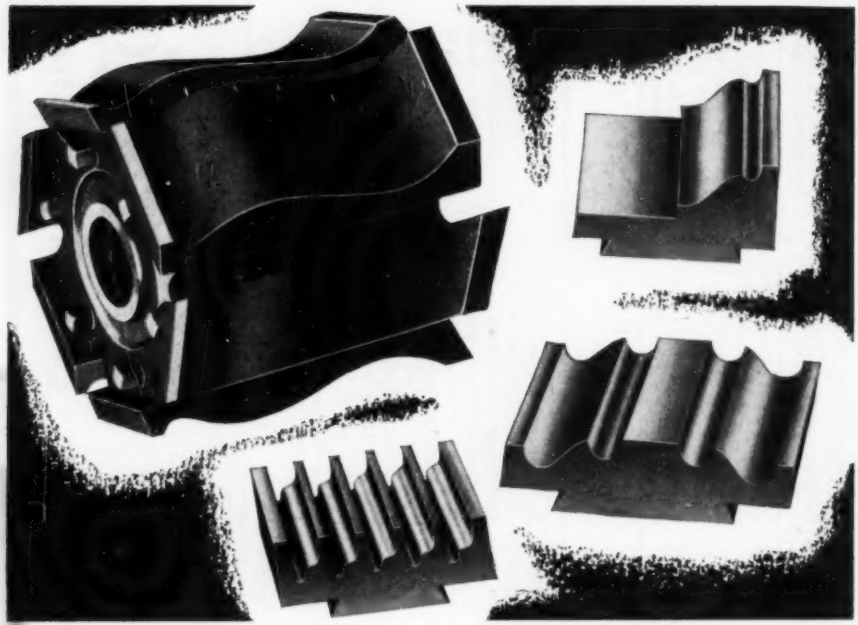
No. of Specification Date of Latest Issue	TITLE	MATERIALS TO COMPLY		
AN-G-8 **25 April 1942**	Glues, cold-setting resin	Type I	CASCAMITE 66M with M-42 (3.5 parts)	No extension
			CASCAMITE 151 with FM-50 (20 parts)	No extension
			CASCAMITE RF-88 with FM-120 (15 parts)	No extension
		Type II	CASCAMITE 12	No extension
			CASCAMITE 14	No extension
		Type III	CASCO-RESIN 5 with FM-62 (15 parts)	No extension
			CASCO-RESIN 150 with FM-142F (12-15 parts)	No extension
			CASCO-RESIN 150 with FM-108 (25 parts)	No extension
AN-P-43 **31 March 1943**	Plywood, aircraft, molded (fluid pressure)	Glues to meet JAN-A-397 or MIL-A-5534		
CG-456 **8 July 1941**	Glue, casein type, water resistant	CASCO Grade A, Aircraft Joint P, 350, 231-P		
CG-496 **17 June 1946**	Glue, resin type (liquid and powder)	Same as AN-G-8		
JAN-A-397 **28 October 1948**	Adhesive, room-temp. and intermediate-temp.-setting resin (phenol, resorcinol and melamine base)	Type I	Class I — CASCOPHEN RS-240M Class I or II—CASCOPHEN RS-216, RS-224	
		Type II	Class I or II—same as Type I, also CASCOPHEN LT-67	
JAN-P-139 **22 August 1946**	Packaging and packing for overseas shipment. Plywood, container grade	Type A	CASCOPHEN HP-402	No extension
			CASCOPHEN HP-403	No extension
		Type B	CASCAMITE 66M (cold)	60 parts flour
			CASCAMITE 66M (hot)	115 parts flour, 5.8 penta.*
			CASCAMITE 151 (cold)	60 parts flour
			CASCAMITE 151 (hot)	135 parts flour, 6.75 penta.*
			CASCO-RESIN 5 (cold)	50 parts flour, 2.5 penta.*

			CASCO-RESIN 30 (hot)	68 parts flour, 5 penta.*
			CASCOPHEN HP-402, 403	100 parts flour, 5 penta.*
			For veneers over ⅛" thick, reduce extender 33%	*pentachlorophenol
MIL-A-5534 **9 January 1950** ***Supersedes:*** **AN-A-45** **USAF-14139**	Adhesive, high temperature-setting resin (phenol, resorcinol and melamine base)	Cond. A.	CASCOPHEN RS-216 with FM-60M (20 parts)	11.5 pts. Glufil
			CASCOPHEN RS-240M with FM-124(20 parts)	15 pts. Glufil
			CASCOPHEN RS-224 with FM-128 (25 parts)	15 pts. Glufil
			CASCOPHEN LT-67 with H-23 (6 parts)	20 pts. Glufil
		Cond. B.	CASCOPHEN HP-403 hot press	30 pts. Glufil
			CASCOPHEN HP-402 with H-21 (4 parts)	No extension
MIL-P-6070 **29 March 1950** ***Supersedes:* AN-P-69a**	Plywood and veneer Aircraft flat panel	Glues to meet AN-A-45 (MIL-A-5534)		
CS35-49 **1 December 1949** ***Supersedes:* CS35-47**	Hardwood plywood	Tech. or Type I	Any CASCOPHEN	No extension
		Type II	CASCO-RESIN 5 cold press	100 parts flour
			CASCO-RESIN 5 hot press	125 parts flour
			CASCAMITE 66M cold press	115 parts flour
			CASCAMITE 66M hot press	150 parts flour
			CASCAMITE 151 cold press	150 parts flour
			CASCAMITE 151 hot press	185 parts flour
			CASCO-RESIN 30 cold press	83 parts flour
			CASCO-RESIN 30 hot press	105 parts flour
			CASCO Grade A, 350, 231-P, Air Joint P, 375, S-2195	
MIL-P-66A **27 December 1949** ***Supersedes:* JAN-P-66**	Plywood, flat-panel	Hardwood plywood to meet CS35-49		

● Send for your free copy of CASCO Service Bulletin 82, "Government Procurement of Wood, Plastics and Paper Products." Lists Purchasing Offices, includes complete Specification Chart, tells how to estimate glue costs. It's part of Borden's Glue Service. Address: Dept. WD-120 The Borden Company, Chemical Division, 350 Madison Avenue, New York 17, N. Y.

Borden's

CHEMICAL DIVISION



They hold the edge . . . stand the wear

When you buy Diehl cutters or blades, of one thing you can be sure:

Each one has been **carefully** inspected and tested for the particular type of wood and methods of application.

All Diehl cutters and blades contain the finest high speed steel, **carefully** hardened by men with years of experience, who have at their disposal the best equipment that modern science and heat-treating experts can devise.

Whatever your requirements for blades or cutters—either solid or adjustable—it will pay you to obtain a recommendation from Diehl. For Diehl cutters **hold the edge. . . . and stand the wear . . .** are the product of a company "where precision craftsmanship is honored."

OTHER DIEHL PRODUCTS: Rip Saws & Cut-off Saws • Diehl-Vonnegut Moulders • Veneer Splicers and Jointers • Tapeless Splicers • Glue Jointers & Edge Moulders • Edge Gluing Machines • Cutter Grinders.

CUTTER DIVISION

On the Banks of the Wabash

THE G. M. **Diehl** MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

LIGHT and POWERFUL for hundreds of shop uses

The New STANLEY W65 6" Safety Saw

Here's the ideal portable saw for working on crates, patterns, trim or other cutting jobs. The Stanley W65 is compact and sturdy, with the advantages of light weight, powerful motor, and high quality. Latest safety guards provide full protection for the operator. Cutting capacity to 2".

Outstanding features of the W65 include: the multi-grip handle, outside knob on the telescoping safety guard, ball and roller bearings throughout, helical gears, and polished finish. Full weight is only 10 lbs. Quick-set tilting adjustment permits beveling at marked graduations to 45°. The W65 is furnished complete with combination rip and cross-cut blade, wrenches, lubricant, and steel carrying case.

Other Stanley Safety saws available in larger sizes are: W7—2½" cut, W8 — 2¾" cut, and W9 — 3¼" cut. See these Stanley saws at your industrial distributor's, or write for descriptive literature. Stanley Electric Tools, 542 Myrtle St., New Britain, Conn.

STANLEY

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

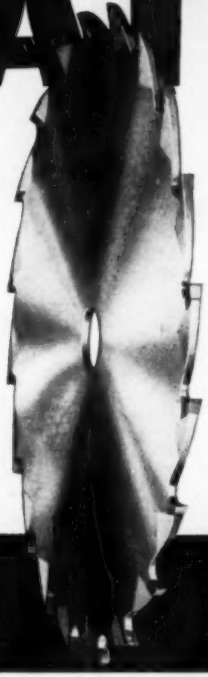
Reg. U. S. Pat. Off.

ATKINS

DUR A TIP

Reg. U. S. Pat. Off.

SAVE WOOD! SAVE TIME! SAVE MONEY!



Here are the hardest, toughest teeth ever found on a saw! . . . Atkins *Dur A Tip* teeth. They provide the fastest cutting action that ever ate through wood! And they stand up to the most punishing jobs—with longer life, longer time between sharpenings! . . . Available in either rip or cut-off, Atkins *"Silver Steel" Dur A Tip* saws have long proved their outstanding ability to give smooth cuts, to save wood, save time, save money!

only ATKINS makes *"Silver Steel"* products

ATKINS *"Curled-Chip"* BAND SAWS

Want a deeper, cleaner bite? Want more and better output and lower saw replacement costs? Then you want Atkins "Curled Chip" band saws! You want the "lift-and-curl" action that only Atkins "*Curled Chip*" saws provide.

ATKINS PLANER KNIVES

"*Silver Steel*" quality! In other words, the *best* quality! And the best *value!* Available in various sizes to fit round or square head machines. Outstanding for longer life, faster cutting and stay-sharp edges.

E. C. ATKINS AND COMPANY

Home Office and Factory: **Indianapolis 9, Indiana**

Branch Factory: **Portland, Oregon**

Knife Factory: **Lancaster, New York**

Branch Offices: **• Atlanta • Chicago • Portland • New York**

ATKINS

"ATKINS ALWAYS AHEAD"

G-J-S 12542 Furniture Manufacturer—January, 1951 (and others)

500,000 NEW HOMES IN '51?

The loud wail you heard recently from several private loaning agencies could be called the last toot of their gravy train. They'd like to make us believe that home building for '51 without them will be nil. The facts, however, do not substantiate their condition.

Before the financing restrictions were set up, which eliminated many of these folks, more than 400,000 applications for government guaranteed loans had been arranged with insurance companies. In other words, there is money available for building more than half a million homes. Add to this the homes for which capital will be made available in line with the restrictions.

Doubtless many of these homes will never be built, but it does seem reasonable to believe that most of them will be. And new homes need new furniture and other wood products.

Ahead of us stretches 1951, filled, no doubt, with events which will help or hinder our industry. Home building may taper off, but in its place government and military orders will require our plants to run full speed. Though we would not prophesy in these days of change, nevertheless, we believe that '51 will be a year of achievement for our industry.

Ned Bailey
Editor-in-Chief

WE HAVE *Failed* AFTER 75 YEARS
- TO SOLVE ALL NAILING PROBLEMS

But THOUSANDS OF PROBLEMS PREVIOUSLY CONSIDERED IMPOSSIBLE HAVE BEEN SOLVED BY . . . . . .

DOIG AUTOMATIC NAILERS

DOIG NO. 45-20-16

NEW FEATURES

A. Wheel on left allows operator to adjust back gage from operating position.

B. Solenoid trip permits operator to trip machine at any position desired.

★

★

STANDARD DOIG FEATURES

1. Anti-friction bearings
2. Three separate motorized drives
3. Nail feeder to handle nails from 1 to 3 inches without additional parts required.
4. Nail feeders to give 12 separate nailing combinations.

WRITE TODAY . . . we invite your requests for full details

WILLIAM S. DOIG Inc.

DEPT. 312 — 55 FRANKLIN ST., BROOKLYN 22, N.Y.

Pointed Paragraphs

Unfortunate as the cause may be, the lumber industry and the woodworking industry know and remember that in past wars the needs for metals are beyond the capacity of production. For many metal uses wood serves adequately: as an example, the heavy utilization of wood for Army trucks and both solid wood and plywood by the Navy for LST and other craft.

Many woods when treated with moisture repellant and anti-termite preparations find a much wider and more profitable market for their manufacture. Have you ever investigated the possibilities of using such chemicals in your plant?

Let's hope that the furniture and other wood products manufacturers will not forget the blunder they made in the last war! Remember there is nothing that takes the place of quality, and if quality can be considered comparatively, then best quality.

A new plastic finish for furniture and other wood surfaces is being produced commercially by U.S. Industrial Chemicals, Inc., under the trade name Aroflint. The basic material is phenolic resin. It has already been tried on bowling balls and interior finishes for ships. Further use is seen for sporting goods, floor finishing and public building interiors.

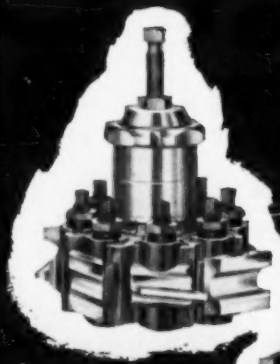
Bundling lumber together only in like lengths and widths saves up to $7 per thousand board feet in loading, unloading, handling and storing, according to the Oakland, Calif., Naval Supply Center. Bundling requires additional work, but ease in handling more than compensates for the cost. Bundles up to 14' long, carry 2 straps, those over 22' carry 4. Spacers used are 4" thick.

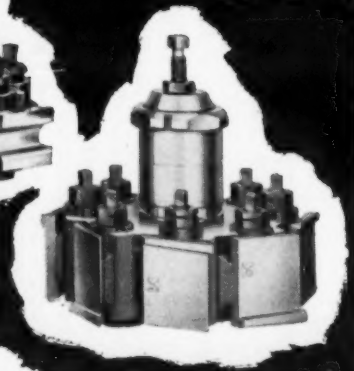
Lumber production in the third quarter of 1950 set a new record. Lumber prices also climbed during this period. Production of Douglas fir continues at a high peak. Most mills have a 30-day production order file and refuse to accept order commitments at current prices for January or February delivery.

(Continued on page 36.)

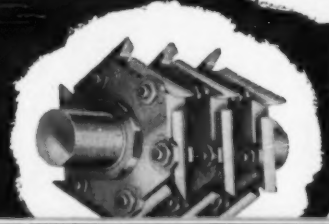
YA MILLED BITS

Engineered to Increase Production and Improve Product Quality





New 200 Series Head. With 8 bits for door sticking.



New 200 Series Head. Shown with eased edge bits.

Maintain Pattern for Uniform Quality. Knives ground to pattern often have variations, which show up in the finished product. But milled-to-pattern bits always assure uniformity. The pattern remains exactly the same throughout each bit, as well as in sets of bits of the same pattern.

Faster Feed Rates. Since the pattern is uniform in the bit, more bits can be placed in the cut, permitting faster feed rates.

Cutting Angle Fixed for Best Results. The *milled bit* is always manufactured with the cutting angle correct for the material to be run, resulting in better finished stock.

Greater Strength and Safety. Milled bits have a body of steel behind the cutting edge, making them safer—and modern head clamps are strong enough to handle the most severe cuts.

New 200 Series Beader Heads. Furnished individually or 3 heads on a sleeve.
Vise-Grip Head. For heavy matching.
Series No. 430 Vise-Grip Cutterhead.
New 200 Series Cope Head. Adjustable for perfect cope fits.

Save Set-Up Time. Milled bits can be set up in a fraction of the time required for ground knives — and with greater accuracy.

Milled Bits Hold Cutting Edge Longer. The pattern is milled into the bit, thus backing up the cutting edge and supporting it in the cut, resulting in longer life. To resharpen it is only necessary to grind the bevel forming the cutting edge.

Yates-American has literally hundreds of stock head and bit designs to meet most needs — and the skilled engineers to work out others for special patterns. Tell us of your requirements.

Let Their Years of Experience Save You Money Now

YA THIN KNIVES are preferred for long, satisfactory service — because they are made of the finest steel, accurately ground, with controlled heat treating.

Yates-American

MACHINE COMPANY—Beloit, Wisconsin

Branch Offices
Chicago, Illinois
High Point, North Carolina
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Portland, Oregon

MATCHERS · BAND RESAWS · SANDERS · SURFACERS · CIRCULAR RIPSAWS

(Continued from page 33.)

Priorities have been instituted on some strategic materials, including lumber. At this writing there is only one rating, DO. The Procurement Office of the U.S. Army Engineers has announced that it will apply the rating to all lumber orders. The rating can be passed on down to sub-contractors, etc.

With the 1950 state and congressional elections out of the way, we hope that wartime controls will be clarified. Both within government and industry the suspense has been costly and frustrating.

Weyerhaeuser Timber Company has developed two new lines of insulating material made from scrap wood of Douglas fir bark. The wood is reduced to chipped form, defiberized, and certain chemicals added for fire and fungus-proofing and dust control.

WOOD WORKING DIGEST readers may remember our October, 1949, finishing article on Amergrain and Amerstain. The Lehwood Corp., South Bend 14, Indiana, is now able to issue licenses to a certain number of manufacturers to use this process.

Three factors governing the number of new homes built in 1951 are: 1) Progress of Korean War; 2) Amount of manpower and material taken from housing construction for war production; 3) Government controls regarding credit regulations.

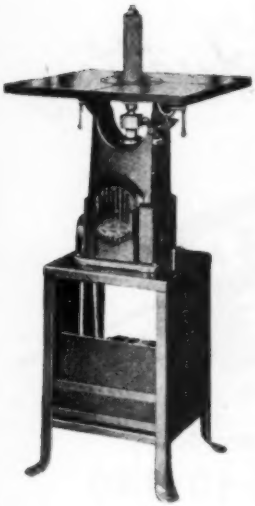
Douglas fir sawmills produced as much lumber in the first eleven months of 1950 as they did during the entire year of 1949.

Be sure you begin reading Tom Perry's new series on gluing techniques. The first article appears in this issue. We shall appreciate any comments or suggestions you have to make about the material planned for the series of eight articles.

The Board of Managers at the annual meeting of the National Hardwood Lumber Association approved an increase in the schedule of inspection fees, effective January 1, 1951.

A word of warning to all of us: National forest acreage burned in 1950 was twice as great as 1949. Now shall we all intensify our efforts that 1951 figures may be cause for rejoicing rather than alarm? During the first nine months of 1949, 171,751 acres were burned compared with 324,414 acres for the same period of 1950.

The outlook for hardwoods during the coming months is very promising. However, the pattern will be set by the volume of furniture sales at the various furniture shows. Although the demand as a building material may be curtailed, this will be offset by heavy railroad demand and military requirements.



The Lowest Priced, Rapid Production SPINDLE SANDER-GRINDER Boice-Crane No. 2006

Has all the important features of high priced machines. Compact, portable, but plenty rugged for even high production plants. Modest prices begin at $165.

Sands wood and does internal and external grinding of plastics, aluminum, masonite, brass, bronze, zinc and sheet metal up to six inches thick, straight and contours to as sharp a radius as ½".

Table, 20" x 20", tilts 45° two ways, by sensitive worm and rack fitted with accurate, quick-reading scale for beveling, drafting patterns and core-box work.

Handles 1", 1½", 2" and 3" abrasive sleeves.

Drum, 9" long, (6" above table) oscillates with a ⅞-inch stroke, 83 times per minute at 2,500 r.p.m., sanding silky smooth with the coarse, faster-cutting, longer-lived abrasives, a sure protection against scoring.

Sealed crankcase. Rotating parts run in oil bath. Oscillating mechanism mounted on precision steel balls for friction-free, vibrationless operation.

Sold by industrial supply distributors.

BOICE-CRANE COMPANY
931 Central Avenue
Toledo 6, Ohio

( ) Please send free literature on Boice-Crane Spindle Sander-Grinder.

( ) Please send new 44-page catalog No. 50 on entire line of intermediate capacity power tools.

NAME.....

FIRM.....

STREET.....

CITY & STATE.....

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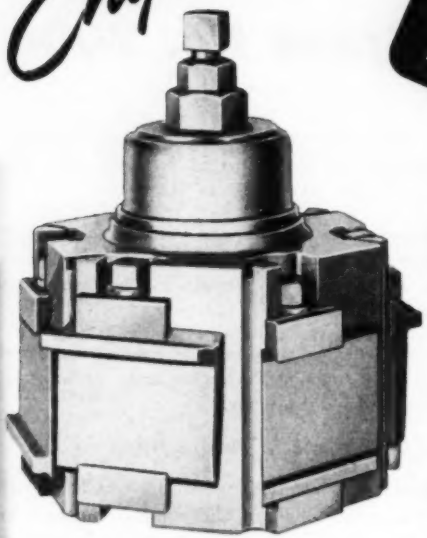

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GLUING

Technique for wood

1. SURVEY OF PRINCIPLES INVOLVED

BY THOMAS D. PERRY

In this issue we begin a series of eight articles on various aspects of glue and gluing. An outline of the series is given in this article. If any of our readers have other details in the preparation of wood for gluing, that they would like included in the series, write to us. If possible, Mr. Perry will try to incorporate these requests into the proper points in the series.

THE SELECTION and utilization of the suitable type of glue and its proper application are basic factors in the strength, durability and appearance of any product made with wood.

During the last fifty years the number of available glues for wood has increased substantially. The advent of the resin adhesives in the 1930's is an example. Not only are there more types of glue from which to select, but the recently developed resin adhesives, produce joints which are insoluble in water and are more durable than the wood itself. In one way, this has made the selection of a suitable glue more difficult, but on the other hand, the versatility of the new glues for specific purposes provides an opportunity for a better gluing job than was formerly possible.

Animal Glues Still Standard

Animal glue, usually blends of hide and bone glue, is so well known and understood, that it remains the standard for strength, or gripping power, by which the adhesive qualities of other glues continue to be evaluated. Animal glue, properly prepared and applied, is as strong as the wood parts it joins together, and joint failure will show substantial wood fracture in all but the densest species. Although animal glue is undoubtedly stronger than the softer and weaker woods, this extra strength best serves as a safety factor and assures the user that joints made with such a glue will have the maximum strength obtainable with the species used.

It should be noted that the established durability and strength of animal glue joints is limited to relatively protected locations, in homes, offices, factories and the like, rather than to weather or moisture exposures, where animal glue is not suitable.

Glue Joint Strength

Most stresses on glue joints in actual service, are of a slipping or sliding character, relatively parallel to the wood grain, which are technically called

shear. While most glues exhibit substantial strength in shear, no glues will give maximum strength in direct **tension**, or where the load is applied in a direction perpendicular to the joint, as is graphically shown in Fig. 1. Many wood products in service, are subject

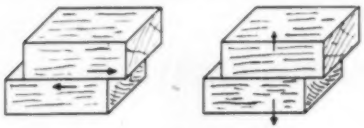

Fig. 1. Direction of glue joint stresses. Left: Shear, with high strength values. Right: Tension, with moderate strength values.

to combined shear and tension, for which a good glue should be adequate, except where the tension factor is predominant. In cases of direct tension across the glue joint, it is often desirable to incorporate in the design, either a lock joint in the wood, or some type of supplementary metal fastener.

There are three major factors in glue joint strength and durability, viz.:— Selection of a suitable glue; Correct application of a properly mixed glue, spread, pressure, timing, etc.; Adequate preparation of the wood, dryness, machining, etc.

Selection of a Suitable Glue

There are two parties at interest in the selection of any glue for a specific purpose, the maker of the glue, whose function is selling, and the user of the glue, who buys it and applies it to his product, and whose reputation depends on the quality of the glue joint in the product.

The maker of the glue is wholly responsible for the development and compounding of a glue that has useful adhesive qualities, that is properly packaged and delivered to the user. If specifications are involved, it is his obligation to meet the requirements of the specification, as well as to satisfy the user that the specifications are complied with. The durability and strength of any new glue offered to the trade should be thoroughly explored by the maker under aging and exposure conditions, either on a normal or an accelerated basis, requiring specialized equipment, beyond the scope of the user and needing more time and experience than prospective users have for such an investigation.

It is the maker's function to supply the user with proper directions for use, or what might be called operating instructions. It is also the responsibility of the glue maker to advise the user as to the kind of glue that will best meet the user's requirements, considering cost, strength, durability and other factors involved.

It is the obligation of the purchaser or user, not only to follow the instructions of the maker, but also to satisfy himself that the glue can be economically used in his plant and is adaptable to his equipment. The user can determine these factors of economy and adaptability and can make his own type of factory experiments with any new glue, but he should realize that while these factors are important, they are only part of the evidence as to its suitability. The purchaser must rely on the glue maker for a background of technical determinations of strength, durability, aging, exposure, resistance to deterioration, behavior under prolonged and intermittent stresses and the like. It seems no more than reasonable that a glue manufacturer would develop such a background before putting his name on the product, and offering it for sale.

Close co-operation between the representatives of the glue maker and the glue user can be very helpful in determining the suitability of the glue to the job in question.

Technical Tests on Glue Joints

There can be no question as to the desirability of such technical tests,

where compliance with rigorous specifications is demanded, either for the glue itself, or in the products made with the glue.

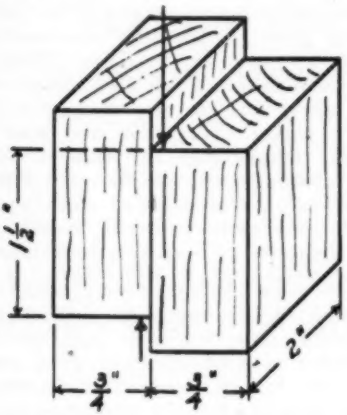

Fig. 2. Diagram of standard block shear test.

These standard glue joint tests, developed by the Forest Products Laboratory and widely used in government specifications, are of two types, the block-shear test and the plywood-strip test. Both have been used for many years and have become well established and recognized. Most laboratories, governmental, educational and commercial, are equipped to make them and to certify as to the results.

The block-shear test involves a compression-shear stress on a glue joint in a block made as indicated in Fig. 2, with a glue joint area of three square inches. The minimum breaking load provided in standard specifications is as follows: blocks made of hard maple 2800 lbs. p.s.i. and of white oak 1800 lbs. p.s.i. No minimum standards have been established for other species. It is to be noted that the load is applied substantially parallel to the grain of the wood. In general this type of test is for strength determinations rather than for durability under severe exposure.

The plywood-strip test subjects a small section of plywood to a tension-shear stress, as indicated in Fig. 3, with a glue joint area of one square inch. The minimum breaking load on plywood strips made of yellow birch is 30 lbs. p.s.i.[1] for dry tests, and 280 lbs. p.s.i.[1] for cyclic or wet tests. This differs from the block shear test, in that the load is applied across the grain of the central layer of veneer. While yellow birch is the accepted standard, minima have also been established for some other species, but are not in general use. The plywood strip shear test, in addition to being a strength test, is also used for durability tests, soaking, steaming, cyclic, etc.

It is quite doubtful whether such rigid technical test procedures are required for most wood products made under normal commercial or civilian demands. In the first place, very few woodworkers have the equipment or personnel to make such tests; in addition, many species of wood are used, which are not covered; and still further the time required to complete such test evaluations in an outside laboratory might impose serious delays in production. In fact, furniture made exclusively of hard maple or yellow birch would represent a very small part of all furniture made of wood.

Fig. 3. Diagram of standard plywood strip test.

Practical Tests

The average woodworker has developed his own types of practical, but

[1]Federal Standard Stock Specifications, C-G-496. (Formerly AN-G-8.)

rather non-technical tests, which may serve quite satisfactorily for a preliminary evaluation. In these practical tests, the criterion of a strong joint is the amount of wood rupture, near the glue joint, rather than the ultimate breaking strength. Such wood rupture indicates a glue joint strength greater than that of the wood at the break, and in most moderate and low density woods is of the order of 50% or more of the glue joint area.

These practical tests usually consist of striking a glue jointed board on a rigid post, or driving such a joint open by a series of hammer blows in the direction of the wood grain. Another type of test, driving a chisel or wedge into the joint, is more of a tension test and not as dependable, since glues are weakest when subject to direct tension stresses.

These practical tests undoubtedly have considerable value, and may be a source of immediate satisfaction to the user. However, they give no evidence of what may happen to a glue joint in a month, or a year, or ten years of storage or of normal service. It is known that some glue joints will improve with age, and some may deteriorate. Therefore any prudent prospective user will base his evaluation of a new glue on a combination of his own practical tests and the assurances given him by the glue maker and supplier.

The important consideration in any evaluation of a glue is close co-operation between the glue maker to provide an adequate glue, and the glue user to satisfy himself that the glue will meet the user's requirements.

What Glue Types to Select?

There is much that might be said as to the advantages or disadvantages of the different types of glues, animal, casein, soybean, cassava, phenolic and urea resins and the like, but that is far too long a story for a brief and readable magazine article. The principal glues used in the woodworking industry are described in "Modern Wood Adhesives"[2], which discusses and compares them in the language of the woodworker. For those who wish to delve deeper into the subject, John delMonte's book "Technology of Adhesives"[3] is recommended, since it provides the more technical background of chemistry and chemical formulations.

The wide adoption of hot pressing has permitted new emphasis on shortening process time and has reduced the volume of semi-processed wood parts on the factory floor. This "speeding up" has made the new resin glues particularly interesting, since they are more in keeping with the modern tendency to increase the ratio of dollar-output floor space and of dollar-output elapsed time.

However, the woodworker that is to progress and improve his product must have an alert and open mind. He must be ready to investigate promising new products and processes. The day of the conservative woodworker, who clings to traditional methods, is fast passing. Success today comes to the woodworker who holds to the best of the old methods, and is constantly endeavoring to better them, whenever and wherever they can be demonstrated.

It has been well said that the improvements of the last fifteen years, in the adhesive field, are greater than in all preceding years. Hence every woodworker owes it to his company to carefully re-evaluate the glues appropriate to his product. If improvement appears reasonably possible, there should be no reluctance towards making changes, but rather an eagerness to keep a stride

[2]Pitman Publishing Co., New York City, 1944.
[3]Reinhold Publishing Co., New York City, 1947.

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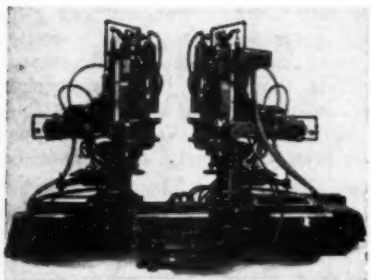

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Adequate Preparation of Wood for Gluing

Looking back over some forty years of practical experience in the plywood and furniture industries, as a glue salesman, as a glue user, and as an engineer in woodwork, the writer can call to mind very few cases in which a glue, properly used, has failed to give consistently strong joints. When a glue is selected with discrimination and properly applied, the failure to make strong joints can almost always be traced to the inadequate preparation of the wood parts to be glued. A competent glue room foreman will pay fully as much attention to the condition of the wood parts received for gluing in his department, as he will to the gluing operation itself. He realizes that he will be held responsible for either efficient or inefficient gluing, and he recognizes that adequate drying and proper machining are the basic foundation for a strong and durable glue joint.

It is with such a diversified background that this series of articles is projected to be published monthly in Wood Working Digest throughout the year 1951. This series of articles will attempt to outline the best methods of preparing lumber, veneers and other wood parts for the gluing operation. In some cases there may be several methods that have been successfully used, in others there may be pitfalls to be avoided, pitfalls that over the years have been very costly to woodworkers.

Outline of Series of Articles Projected

I. Survey of Principles Involved. This article.

II. Lumber Cores. Lumber cores are the backbone of plywood. All lumber must be uniformly dried to 5% to 7% moisture content and kept in properly air conditioned dry storage until needed. Glues with high solvent ratios require

dryer lumber than those with high solid ratios. The rough dimension department should be conveyorized. The problem of clamp carriers vs. continuous clamping machines requires evaluation, as does the use of electronic core gluers of the batch type. All lumber must be taken out of "wind" before edge jointing, and final surfacing must be a very light cut. The non-warping effect of quarter sawn lumber is an important consideration, where flatness is essential.

III. Edge Gluing of Veneers. The day of the machines for applying gummed tape is gradually drawing to a close, except in the case of highly figured face veneers. Special methods are required to flatten crinkly face veneers without tearing the fragile fibres. Veneers are unusually susceptible to moisture changes from the humidity in the air. Face veneer requires jointing with rotary cutters, or on guillotine machines. Similar jointing is required on other veneers if they are to be edge glued on tapeless splicers. Two-ply reinforced face veneers will do much to stabilize fragile faces and reduce checking in plywood.

IV. Plywood Operations. It is essential that all plywood layers be accumulated and stored in air conditioned rooms prior to gluing. The relationship of cold pressing to hot pressing has changed since one- and two-opening hot presses have become available. The advent of the hollow or semi-hollow core, as in doors and desk tops, has become an important factor in lumber conservation. The reduction in clamping time, from hours to minutes, in hot pressing, has completely revolutionized the old fashined glue room and has largely eliminated the multitude of accessories, head blocks, clamp irons, R & L clamp screws, blocking, etc., formerly required for bundle clamping in cold pressing. Formed plywood, as

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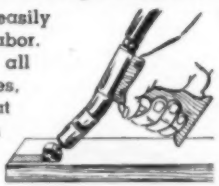

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in "Bentwood" trays (Overton), can only be made in hot pressing.

V. Simple and Compound Curves in Plywood. Simple curvature in plywood can be made by recessing the concave side with saw cuts and gluing a reinforcing strip of veneer in the curve, using a heated pressing cylinder such as supplied by Handy. Simple curvature, as in grand piano rims, can be made by clamping ⅛" veneers around a rigid form and using electronic heat to cure the glue. Molded plywood in compound curvature, can be made with flexible bag pressures. Bends, as for table and chair legs, can be made by multiple slots, filled with glued veneers.

VI. Laminated Timbers. This is a method of making large timbers from small boards. It is important to surface just before applying the glue. Timbers can be made straight or curved, or with expanded or tapered sections, as may be required for reinforcing curves, or narrowing the ends to be mounted on concrete buttresses. Hollow girders and the use of gusset plates are akin to laminated timbers. The use of calibrated torque wrenches is an excellent way to secure adequate and uniform pressures. For marine work and ship construction, where extreme waterproofness is essential, durable joints require conditioning chambers to heat the clamped assemblies up to approximately 200°F.

VII. Assembly Joints. This covers a great diversity of assembly operations, where accurate fitting is essential, since practical pressures are relatively low. Special pre-sizing is important when gluing mitres or end wood. Compressed dowels and splines give durability and strength to the joints in which they can be used. Induction heating can often be incorporated in clamping mechanisms to cure resin adhesives in assem-

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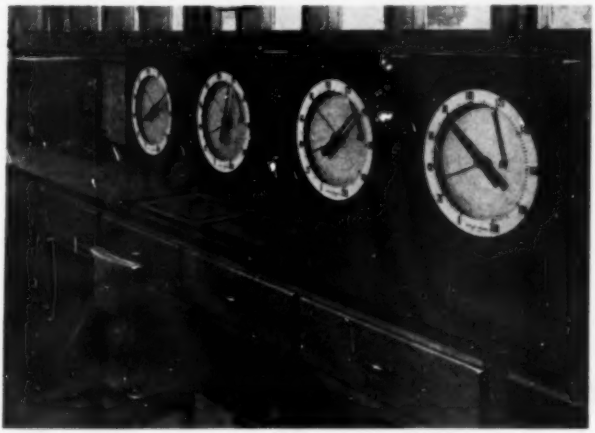

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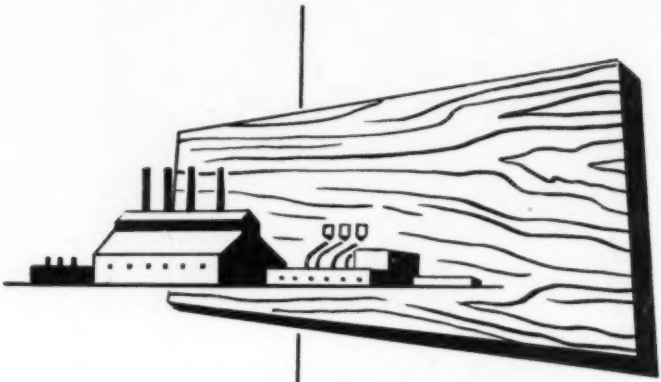
bly joints in a matter of minutes.

VIII. Metal-to-wood and Metal-to-metal Joints. There are two processes of gluing metal to wood, as in plymetal, the use of casein-latex glues in cold pressing, and the use of heat reactive resin adhesives, such as Redux, Cycleweld, and other recently developed resin adhesives for metal. In wood to metal, as in metal to metal, it is of prime importance that the metal surfaces be thoroughly cleaned of oil, grease and other impurities. An important factor in all joints with metal layers, is the relative relationship of co-efficients of expansion, between normal room temperatures and 300°F. The larger the area, the more serious the unequal factors of expansion.

The End.

Who hath deceived thee so often as thyself? **Crosby Clipper**

SYNTHETIC RESINS



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*Test No. 21575—Aug. 3, 1950

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BY FRANK T. PARRISH

Furniture DESIGN *and lumber utilization*

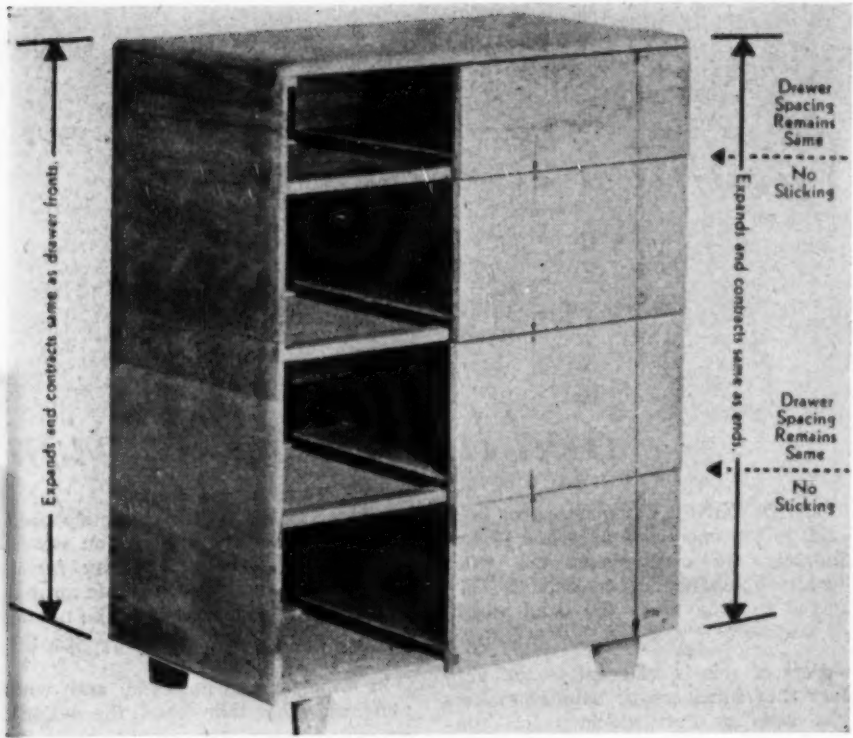
TRADITION, it has many times been said, is the enemy of progress. Unfortunately, for many years the wood furniture industry has consistently been forced to drag along the dead weight of tradition.

Part of this is inherent to the very fact that furniture or cabinet making has been a craft industry for hundreds of years. Also one finds that among the remembered names of many of those known for their furniture designs of early times, few were rated as scholars of engineering or as masters of the sciences.

With few exceptions there seldom appeared in the older history of furniture design, any studied attempt toward using a minimum of raw material in creating the finished product. It seemed to follow that proper design procedure was to call for all the lumber that could be crowded into the article being crafted. An interesting project for some of the more mathematically minded might be to figure the margin of safety that a past designer, whom you would recognize by the name of Morris, thoughtlessly used in most of his chair legs! You would probably find that the safety factor based on the stress developed in normal use in some instances would be nearly 50.

In other lines, however, and with materials other than wood, the designer or engineer has always carefully worked out minimum size stock requirements that would safely carry the necessary load. He would never think of using a 4-inch steel member if a 2-inch member would support the load with a nominal margin of safety. Not so did the furniture designer! Pile on the stock. Add all the bulk possible and it was felt that the public would love it! And the sad part of it was, he was right; the public would and did fall for it, hook, line and sinker. Up until very recently carloads of the so-called Borax furniture were designed, made and sold on primarily bulk factor alone.

Of course, all through the early years of furniture design there was continually seen the faint glimmer of


Expands and contracts same as drawer fronts.
Drawer Spacing Remains Same
No Sticking
Expands and contracts same as ends.
Drawer Spacing Remains Same
No Sticking

Changing climatic conditions and modern heating cause violent expansion and contraction to wood furniture. The above cutaway of a four drawer chest, not finished to show the direction of the grain of the wood, is used to demonstrate the "climatic control" construction. The horizontal direction of the grain in the end and panel front allows expansion and contraction up and down. This eliminates sticking drawers and no matter how much the chest expands or contracts, drawer spacing will remain the same between each drawer.

a light. Some of the more thoughtful designs of Hepplewhite, Sheraton and others gleamed with numerous refined and delicate motifs here and there. Even some of our early colonial designs of the thrifty or frugal early settlers wasted little material. In fact some, particularly the Shakers, made pieces that used any and all kinds of lumber at hand to an extent that much of it was too ordinary to have broad appeal.

From the General Grant era and through the "Gay Nineties" in this country, the massive Eastlake and Mission styled furniture was again the rage and carloads of such types were turned out. At about this time the lumber scarcity in Europe was apparently foreseen and numerous light-membered bentwood designs came on the market from across the water for the first time. Probably some of these better styled Austrian bentwood chair designs could be called forerunners of

Concave and convex drawer fronts seen in this suite reflect highlights. The Koh-i-noor suite is made of birch wood. Grain runs horizontally on chest and drawer sides to prevent sticking. Modern furniture, it is finished in Wheat for Champagne. Made by Heywood-Wakefield Company.

considerable of the accepted modern of today.

Furniture design strictly from the standpoint of lumber utilization is still not the guiding star of furniture designers (or manufacturers) even today. There is, however, a very much greater utilization of its full value than ever before.

As a nation we early acquired the habit of being wasteful with most of the raw materials that our forefathers found in this country in abundance. The woodworking industry was no exception. Paul Bunyan and his blue ox are symbolic of how the emphasis has always been on mass lumber cut, rather than on maximum of utilization.

Frequently due to economic pressure, periodic drives have been made to reduce lumber waste. Seemingly after some success at each attempt, a war period or boom-time would follow and all that had been gained would be lost.

This was the case as we went into World War II and emerged into the post-war boom period that followed. A terrific pent up demand for wood products existed, particularly for furniture. With such a demand for goods, all thought and pressure by furniture manufacturers seemed to concentrate on just one thing—to cut up more lumber.

Erroneously, the lumber cut has too frequently been the general measuring stick for furniture production rather than the correct factor of net footage cut or yield. Lumber waste that had been methodically reduced through careful study and practice during the late thirties to perhaps the lowest point in history soared in the late forties to a new high for recent years.

Once again management has become aware of this costly lumber waste and cognizant of the fact that to get more furniture production, something other than just cutting more lumber is required. The findings of tests made today are somewhat different from those of previous studies. The high waste is now due to the accepted fact that the better grades of pre-war lumber with the long clear cuts are lacking. The reason—a growing scarcity of the higher grades of lumber and a greater percentage of the lower grade in every load.

From this it is apparent that the old

approach of trying to reduce the lumber waste percentage or to improve the yield by studying such things as the cut-off operations or the ripping and matching methods, or even better lumber handling and kiln drying practice would gain very little.

The answer, seemingly stares one in the face. It boils down to a specification and design problem.

Design Objectives . . .
Greater Lumber Utilization

Such was the writer's problem to solve not too many months ago, and the balance of this article will be a report on obtaining the maximum lumber utilization thru a co-ordinated effort of design and development. This is not a case of idealism, which as the saying goes, increases in direct proportion to one's distance from a problem. Rather, this will be in the most part an inside story from close quarters.

The case at hand deals entirely with a solid wood operation of well over a million feet of birch lumber cut each month. The products involved are groupings of bedroom, living room and dining room furniture in both modern and colonial styling. We might add that the modern is regularly finished in the lighter shades and requires sap lumber in the more prominent members such as tops or fronts or ends of cases. The colonial patterns take the darker finish, and can be cut from the heartwood. To carry this information way back along the line, even to the cut-off sawyer, a system of allocating odd numbers for modern styles calling for light cuts and the use of even numbers on all colonial patterns where heartwood could be used, was put in operation. Each and every cutting bill contains this information and it appears at all times thru processing

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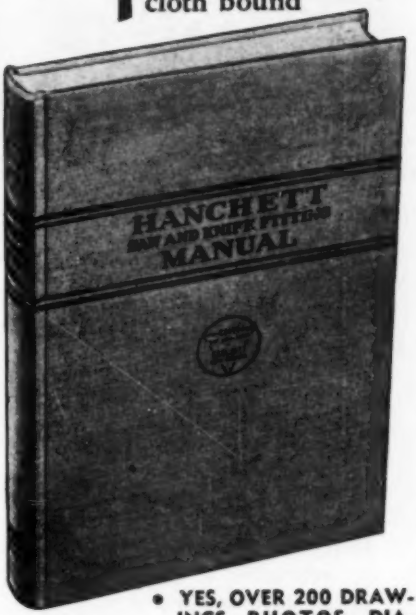

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A Specific Design Assignment

The first design assignment covered a new bedroom suite, including the new double dresser which has become popular with the public but unpopular with the lumberman because it ordinarily requires a high proportion of long cuts. Shorter length of cuts was the first "strait jacket" that we placed on ourselves in designing this new suite. We set the goal of designing a bedroom suite that would have style and eye appeal to the trade and yet have a maximum of short cuts for the mill room. Numerous tries were made with different short-pieced drawer front combinations before we hit on something new. The new idea has a simple concave-convex three-piece drawer front with the pieces so positioned as to create interesting shadow lines and to serve functionally as drawer pulls as well.

A double barreled feature was discovered while working to use short cuts on case ends. By running the grain horizontally instead of vertically, we found that it not only made a better modern design with a short cutting of only 18" instead of 30" or 40", but that we had produced a case in which the drawers would never stick or bind. Because as the drawers swell in the humid months of the year the case ends do likewise to the same degree. During the dry months the reverse is true, and no matter to which state of the Union the furniture is shipped, drawers just cannot be made to stick or bind even though they are closely spaced at the factory.

The drawer front proportions are such that the cutting lengths of all pieces in each case are the same. The chest calls for 13" cuts, the dresser for 16", and Mr. and Mrs. twin chest for 11". Eighteen inch cuts take care

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of the ends of all cases. It all works out so simply that one wonders why it wasn't done a long time ago!

Dimension Stock Steps Forward

Standardizing on dimension stock wherever possible and the design development geared to make use of this efficient method of lumber utilization will go a long way toward allowing the regular cut-off waste factor to drop. Drawer side stock, bed rails and frame rails, as well as the old standard chair and table leg squares, are items that should be cut "back in the woods" so to speak, rather than to cut from full length lumber at the factory. The new approach with stickered and wire bound bundles of dimension lumber is a step that overcomes costly handling labor, and further increases the ease of drying, all of which adds to the advantages of greater use of dimension stock. An efficient dimension stock mill set up at, or close by, the lumber supply saves labor as well as material. Small mills strategically placed can operate very efficiently from smaller growth or poorer grade of logs than could be effectively sawn and hauled for several hundred miles to the main furniture factory.

If one finds operations to which dimension stock is not adapted and long lumber must be used for the entire production, a design program based on certain specified widths, such as for drawer fronts, chair backs or the like can be worked out.

Segregation of certain widths (or multiples) in the lumber yard for such standard items will go a long way toward accomplishing greater utilization.

Design and Development Responsibility

In the opening remarks I made several references to the bulky and over designed stock sizes of furniture preva-

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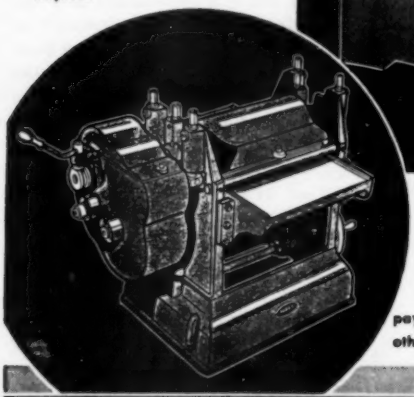

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lent until very recently. It is to be hoped that that dim light that has always tried to shine and point toward "better design for better living" will see some of this newer, lighter feeling modern become even more widely accepted.

A saving in lumber through the mere use of lighter stock sizes is not generally credited to lumber yield. However, I am sure that if one concedes that we do not have the wide stock today, or the high grade, heavy lumber, that some credit at least should go to the designer who works out an equally accepted item of lighter stock.

It could well be that through an extended use of more bent parts instead of specifying heavy or wide band sawn stock that worthwhile lumber economy will result.

Again with the help of the newly developed compressed type of joints, sufficient strength at these vulnerable points can now be obtained with lighter members. Through the use of both the Valiton* compressed tenon and the expanding dowels, or Expandowels* as they are known to the furniture manufacturers who are now using them widely in very large quantities, stronger, everlasting joints can be assured. The use of these modern joining methods will also, in many cases eliminate the need of reinforcing corner blocks or glue blocks formerly deemed necessary. This all amounts to a lumber saving at the end of the year.

Along with these ideas, the narrower standardization of parts such as drawer stock, chair boxing or similar parts through careful thought in designing would indirectly affect the yield and reduce the waste. One must never forget that lumber today not

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*More information available through WOOD WORKING DIGEST Market Service.

only yields shorter clear cuttings than in pre-war times, but boards average much narrower in width as well. Glue up the narrower pieces into wider widths you say? True this has to be done for many parts, but in all cases doesn't some lumber disappear every time an unnecessary edge joint is made? Multiply the lumber lost in making each unnecessary joint for a large scale operation where millions of joints are involved and it amounts to a lot of waste footage.

Wood and Metal

To make efficient design and the optimum use of the materials involved there is no doubt that the use of metal along with wood will benefit all. Certain members of metal can well be used with the balance of wood creating very pleasing design and offering a method of increasing the strength over wood alone (unless one reverts to Mission or Eastlake proportions.)

Development and production of this type of furniture for modern schools during the past few years has proven conclusively that it is here to stay and we can expect to see its use expand in the home type furniture. Again it is a case of form following function, or at least going hand in hand. When, to this almost indestructible furniture of wood and metal is added a high pressure laminated top it will truly be indestructible, at least as far as any normal use applies.

Wood and Plastic

Speaking of the plastic laminate, here is an ideal way to improve poor quality wooden panels.

Table tops may be made from a panel of inferior surface wood under a high pressure phenolic laminate, preferably of the new wood-grained type with melamine top film applied with a resin adhesive under high pressure. Design calling for tops of this specification will greatly help the lumber waste. Wood

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may not get the credit for this promising development, but we will see more and more of this used in the home.

Experiments made with various thickness top films show that very good results at lower cost can be had with much thinner laminated sheets than are standard today. A boiling and baking test run on a .020 inch instead of standard .060 inch has found it to be quite satisfactory. One applied at .012 inch has been very interesting although here the core must be almost a perfect stock panel to properly take this thin laminate.

New Wood Products For Designers

Just how far the sawdust core will go toward reducing lumber waste and the exact date as to when it will become more widespread in its use than at present is hard to accurately predict. I think it is safe to say that it is not too far in the future. From tests, it is several laps ahead of the honeycomb paper core. The main reason is that it can be handled for surface laminating at much higher (and more satisfactory) bonding pressures than can the honeycomb core type.

You may ask why we have skipped directly to sawdust core or hardboard without any discussion of plywood or veneer as a means of better lumber utilization. For centuries it has been admitted that veneering was a sound way to produce panels and get the most good face stock from a minimum amount of good lumber. However, to hear the cry from the veneer people today about the scarcity of good logs for face veneers, it would appear that they will find it hard to solve lumber yield problems from now on in!

As there has been found to be a customer resistance to the use of the hardboards in furniture where wood

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in its recognizable form has been accepted for so long a period, the veneer or plywood panels are a long way from becoming obsolete. I have particular reference to the resistance of buyers to the use of masonite or similar board for case backs, dust panels or drawer bottoms. Now there are grained hardboards that are true likenesses of plywood panels on the market. It appears to be just a case where time will tell; the designer can do little more, it is up to the public to elect or reject.

This article could not be called complete without some mention of a finish that would be dark enough to cover all lumber defects and we could then utilize almost everything in the lumber except the whine of the saw! Unfortunately at least up until yesterday, the public does not want dark finishes --they want light finishes. Perhaps we should be willing to concede that as long as they don't want to hide the light, cheerful living feeling that natural woods possess proves that they still want wood in their life and that it is fortunate for all of us. Perhaps tradition is not entirely bad after all and we can remain at our jobs in the woodworking industry for some while longer at least!

Conclusion . . .

Designs Unlimited

Seriously, though, the modern design approach to new furniture styling is broader in scope now than at any time in its past history. The design and development of new furniture today requires even more thought and study than we would expect from an industrial designer of a complicated ma-

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This speech was presented at the 1950 Fall meeting of the Wood Industries Division of the A.S.M.E.

Mr. Parrish is experimental and development manager, Heywood-Wakefield Company, Gardner, Mass.

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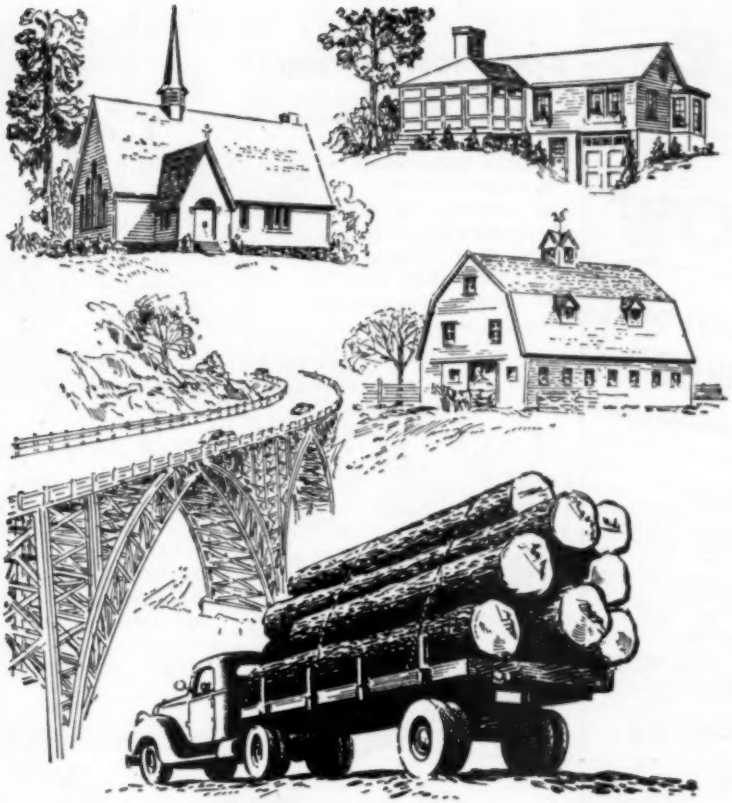
chine of metal and plastics. This requires a thorough knowledge of customers' requirement, style line, material characteristics and material economy.

I think we can conclude by saying that the furniture designer of today has to have both eyes open—one eye, he must be sure to keep on S. A., (I am referring to sales appeal) and the second eye must be kept focused on the design and development of specifications and methods to assure a greater lumber yield or utilization of nature's greatest gift to man—wood.

The End

"This country is composed of two kinds of people. One group believes that government can support all citizens. The other wonders whether all citizens can support the government."

—James A. Farley.



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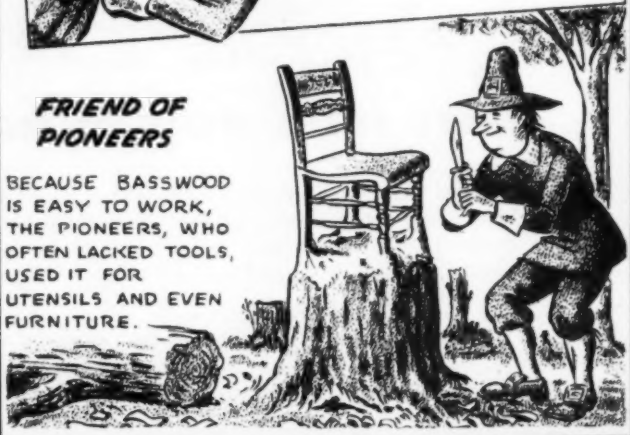

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Know your trees

BASSWOOD

BY NED BAILEY

How many of us who use wood as the basic material in the manufacture of our products know much, if anything, about the material? Little do most of us know what the trees look like when growing, where they grow, and for what uses the wood is best adapted. Each article in this series will be comparatively short, but we hope to describe these characteristics sufficiently so that our readers will know one tree from another.

BASSWOOD is often referred to as the American linden, or whitewood tree. The British refer to it as a species of lime. American basswood forms a handsome, compact, narrow-crowned tree, from 50 to 100 feet high and occasionally higher. The trunk is symmetrical and measures from two to three feet in diameter. The largest and most vigorous trees are found in fertile coves and on lowlands near streams within the central states. Here basswood often grows to a height of 140 feet, with trunk diameter of 4½ feet.

This specie grow over a greater part of the eastern half of the United States, and up north into Canada as far as New Brunswick, thence to the eastern shores of Lake Superior. In the South, white basswood is often mistaken for American basswood. White basswood differs in that it has silvery white leaves, smooth on top and covered with fine hairs on the lower surface. Both the American and white species have about the same value commercially. Basswood grows in groves with other hardwoods, not forming pure stands of its own.

The tree was originally named **Tilia glaba** by the French botanist, Etienne-Pierre Ventenat, because of the smooth surfaces of the simple, alternate, broad, heart-shaped leaves. The upper surface is dull dark green, the lower surface paler with occasional tufts of rusty brown hairs in the axile of the principal veins. The leaves have coarse teeth on the margins.

Young trees have a smooth, thin, gray bark. The buds are dark red and sometimes greenish. They have no distinct flavor, but they do become mucilaginous when chewed. The dark gray bark of the old trees is about an inch thick, deeply furrowed into narrow, flat-topped firm ridges, with characteristic horizontal cracks. The fibers of the inner bark, bast it is called, have long been used in making cord, fish nets, mats and similar articles.

After the leaves are fully developed in June and early July, the white or cream-colored flowers appear. These are fragrant, perfect five-petalled blossoms that grow singly and in clusters suspended on a stalk, from a leafy bract. By early October, gray woody spherical fruit, about the size of a pea, develop from the fertile blossoms.

The color of the basswood tree ranges from white to creamy brown. The lightweight, when air dried about 26 pounds to the cubic foot, as well as the color and good working qualities, make it preferred for many purposes.

The stand of basswood in the United States has been estimated at 4,000,000,000 board feet, about one-half of which is in the lake states. Basswood lumber production over the last five years has averaged about 16,000,000 board feet. Wisconsin and Michigan accounting for about one-third, West Virginia and Kentucky furnishing another one-third of the total cut. The peak in basswood lumber production was back in 1909 when the cut reached 400,000,000 board feet.

Fortunately, it grows rapidly, developing from stump sprouts as well as seeds. Trees mature at from 90 to 140 years. When crowded by other trees they form a straight trunk with clear lengths of 50 to 75 feet.

While the leaves are frequently disfigured by insects, the basswood tree seldom succumbs to their attack. Fire will cause hollow butts, inviting the development of wood destroying fungi.

One of the features of the basswood tree is its ability to adapt itself to difficult conditions. For this reason, in the eastern part of the United States it is frequently recommended for city stave baskets, splint or market baskets on the Pacific slopes.

Basswood, although not a really durable wood, is truly a wood of many uses. In the veneer field, it has the distinction of one of the few species that can be "cold-cut" satisfactorily, with either a knife or a lathe. Cooking it, preparatory to veneer cutting, has been found to produce fuzzy, fibrous veneer. Basswood slats for venetian blinds are sawed. Cut on a rotary lathe, basswood is found to have a fine texture, holds glue well and takes a good finish. It is often used for cores and cross-banding. It is particularly adaptable for bent plywood cores.

Rotary cut basswood veneer is flexible, tough, odorless, moderately heavy, light in color, and will hold nails, staples or wire stitching. These qualities make it an ideal material for berry boxes, till baskets, hampers, round stave baskets, splint or market baskets and climax or grape baskets.

The consistency of basswood, and its light color, make it good material for wood flour filler. Shavings are used for making wood briquettes, packing material, stable and kennel bedding and lime burning. Pressed wood and wallboard are also made with basswood sawdust and shavings. Basswood is also used for oven distillation, yielding noncondensable gases, an aqueous condensate, pyroligneous acid and tar, commonly called "green liquor" and charcoal.

Staves for slack cooperage of basswood are usually cut in bolts in the woods, the bolts being shipped to stave mills for processing.

Because it is light and tough, basswood is used in making packing cases. Other products made from this versatile wood include a wide variety of woodenware, many small wooden articles such as toys, model airplane parts, bric-a-brac, excelsior and paper pulp. It is used in the manufacture of furniture, but it is not so favored as many other specie.

The End.

SLATER SAW CATALOG

We are told that the F. M. Slater Saw Company, Inc., have recently issued a new catalog completely describing all of their cutting equipment. Specifications, illustrations and suggested uses accompany each tool.

For a copy, write to the Company, Dept. WD, 14397 Schaefer Highway, Detroit 27, Mich.

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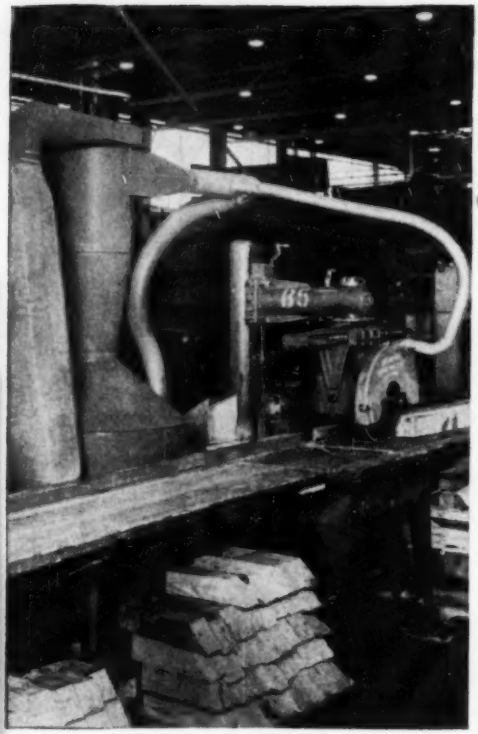
TORIT DUST COLLECTORS



Keep the "chips *from* flying" on this swing saw.

The circular saw shown here is used for cutting hardwood timbers. Suction pipes attached to the wheel enclosure lead to a TORIT 13-FB Dust Separator. The heavier particles are removed by the cyclone unit, and fine dust by the after-filter.

This Torit installation eliminates the need of a central dust system, with its maze of expensive piping. Operating only when the saw is running, it cuts operating costs. Furthermore, it recirculates the cleaned air to maintain room temperatures.

Both cabinet and cyclone-separator type TORIT Dust Collectors are available in special purpose units with extra large storage reservoirs. Especially suitable for handling wood working dust problems, they offer real savings in installation, operating and maintenance costs. For details and the latest TORIT catalog, write:

Torit Dust Collectors are also available in self-contained cabinet type units for carrying away dust-laden air around grinding, cutting and polishing wheels.

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Air compressors in the WOODWORKING INDUSTRY

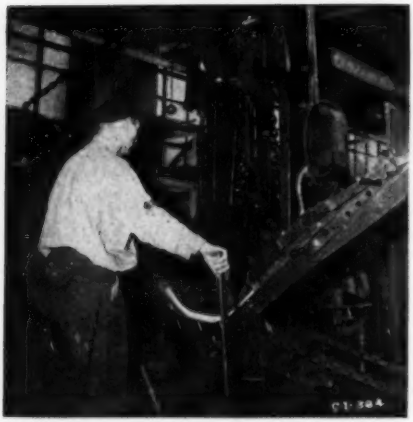
BY NED BAILEY

For the consideration in this article we define a compressor as a machine for compressing air or gas from an initial intake pressure, usually at normal atmosphere conditions, to a higher discharge pressure. The compressing element may be of the reciprocating type or the rotating type.

TWO ELEMENTS in this world's economy that nature has an abundance of are directly related to our industry, trees and air. I venture to say most of us are not too well informed on either one or the other. The dependence of our industry on air is rather surprising, unless you stop and consider the many places it is used. The reason for this may be in the fact that compressors are usually found tucked away in some out-of-the-way, out-of-sight corner of the plant. The applications for power they produce may be numerous and easily visible throughout the plant, but nobody thinks about where the air-power originates.

Like the use of wood, the use of compressed air is traced back many centuries. Some 4,000 years ago, a wooden cylinder and piston were used to produce air blasts. Subsequently, it seems that some inventor named Ctesibius of Alexandria, during the reign of Ptolemies, about 300 B. C., invented a wooden tube out of which an arrow was shot by compressed air. (He probably was the equivalent of our atom bomb inventor.) A chap named Hero of Alexandria, one of his pupils, found out about the influence of heat in expanding and contracting air. Although Hero evidently had an appreciation of the fact that his invention could be used to help do many of the jobs for his fellow citizens, he decided to do otherwise. History tells us that he decided to tie up with the priests of his time and showed them how to confound and frighten the people by opening and closing the temple doors with compressed air. This took place about 150 B.C. Nothing much was done to further progress of harnessing air power for many centuries after that, according to all we can find out.

Compressed air and gas, that is as we know them today, came back into history in a very interesting manner, during the construction of a tunnel in the Alps. It is referred to as the Mount Cenis tunnel, connecting the railway systems of France and Italy. The work of constructing this 8-mile tunnel, through practically solid rock wasn't progressing too well. In fact, the one and one-half feet they were able to excavate per day was very discouraging. Fortunately some inventive genius of the time came up with



Once this man had to hold the pattern to the piece during bending by also bending his back to the lever, but compressed air provides the pressure now for this work. Air piston is controlled by the ball and chain lever, upper center, at operator's reach.

a water-power driven machine for compressing air. It was put to work on the project in 1861, taking the place of man-power in driving the drills. This brought the daily progress over 300%

More power and less weight. That is why assemblers in this chair factory prefer air-operated tools such as the drill being used and the screwdriver on shelf at left.

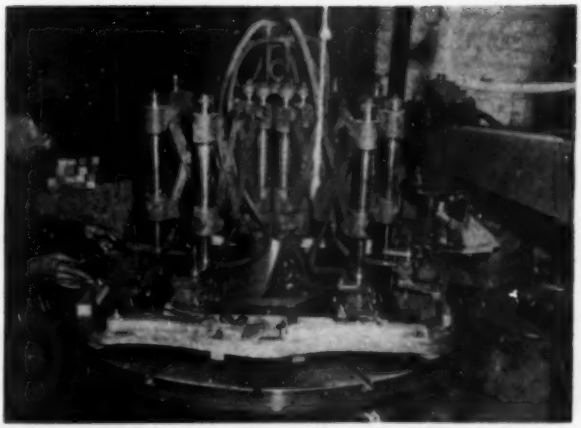
or 4.75 feet per day. Not much by present day standards, but enough to give compressed air an auspicious start in industry. During the 17th and 18th centuries, engineers had been working on air machines, but they had not proved practical until the Mount Cenis incident definitely demonstrated the practical value. Compressed air had arrived.

From the foregoing it is easy to understand why the early development of compressors was primarily for the operation of rock drills. Starting from this time new needs and uses for compressed air have been found. Many of these needs have been taken care of by compressor manufacturers and others with various appropriate equipment.

One compressor frequently supplies the power to a number of entirely dif-

Pumice stone is removed faster and cleaner after rubbing with air pressure.

ferent types of operations. Some of the many features of compressed air include: ability to fill the need where the air power supply must be constant, or where the need is intermittent;



Automatic shaper handles pieces as rapidly as they are fed to the machine. The "grove" of pistons in the center each actuate a clamp which automatically closes on piece as it approaches the shaper, at extreme right under machine arm, and then release pressure as piece rotates toward operator.

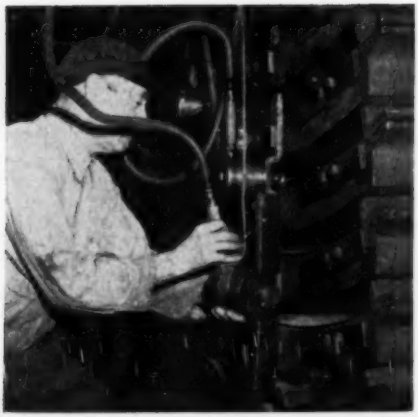
where the pressure required is one pound or 5,000 pounds per square inch; for high or low vacuum; and where the source of air power may be stationary or portable in order to reach the work. For these and many other requirements there may be found air compressors specifically designed and built for the purpose.

While holes are being bored in this backpost, compressed air line, at operator's right hand, blows away shavings. Accurate work and no delay results. Same foot pedal which starts drill releases air pressure automatically.

Much of the heavy work in sawmills, lumber, veneer and plywood plants is done with the help of compressed air. Unloading logs, splitting, cutting, sawing and trimming logs, are only a few applications. Air is used to blow sawdust and shavings from machines, for cleaning rafters, timbers and framework. Spark free air hoists capable of handling heavy loads with speed and ease eliminate the fire hazard from motor sparks in the presence of combustible materials.

More production with less effort resulted from the installation of an air piston on a press. The worker formerly held a pattern to a piece of wood in the press by bending his back to a hand lever. With the piston installed the physical exertion was eliminated.

Better production is claimed for air operated machines. For example, in place of slow hand operations of saws in the front skirting operation for chairs, two air pistons mounted in the center of the machine raise and lower the saws. On a combination sawing, boring and framing machine are air pistons which furnish the power. Compressed air is used for these and many other operations because its resilient



Piston in worker's hands is actuated by compressed air and serves to straighten pieces in backpost press so that 31 more can be placed in press each time. Three of these clamping devices are used on the press.

pressure adjusts itself to the varying specie, wood conditions and thicknesses, thus avoiding breakage.

Air jets are used in woodworking plants and shops to clean out sanding machines; to automatically blow away sawdust and shavings from mortisers, boring machines, etc.; during operations which require that cuttings be cleared from the work, also for blowing off pumice stone after rubbing.

Air clamps are used to hold work in such machines as automatic shapers and to straighten pieces in presses. Pneumatic screw drivers and wrenches are used in assembly. Other pneumatic machines are used for buffing and wood carving.

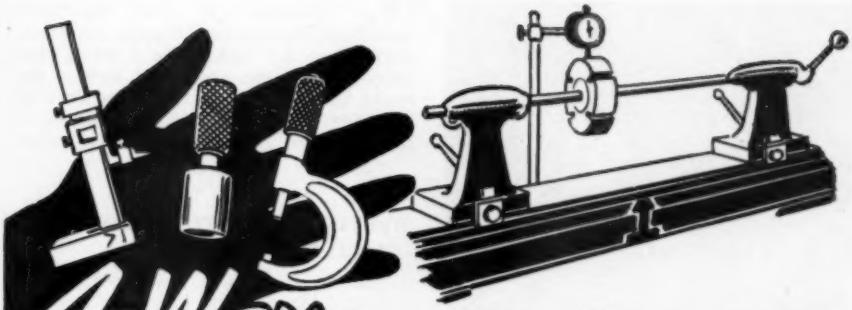
Painting, varnishing, enamelling, filling, etc., are done with spray guns. Sandblasting to get decorative grain effects in solid woods and plywoods is also done with spray guns.

Are you getting full use of your compressor? Here are a few more applications of compressed air in the woodworking industry that might suggest additional uses for this valuable piece of equipment.

Sawdust and shavings are removed from all machines in the chair factory by the quick, positive action of compressed air.

Chairs are varnished in a fraction of the time taken for hand-operated methods.

Air clamps, vises, lift tables, spraying with enamel, paint, varnish, shellac, sand stain, and filler, wood bending, plywood press operating equipment, rubbing, wood carving, cleaning sanding machines, sawdust, shavings, chips, pumice. Upholstery saw operat-



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CUTTER HEADS BADGER KNIVES

Engineers to the Woodworking Industry

WISCONSIN KNIFE WORKS

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Two air pistons above either side of operator's hand raise and lower saws while air pistons at both ends of saw, boring and framing machine furnish the drive for boring tools. Compressed air adjusts its pressure to stock, avoids breakage.

ing on skirting and other machines, operating framing and boring machines, spark free air hoists for loading and unloading. These are just a few of the many uses of air in the woodworking industry. Another article on air compressors will appear in an early issue.

The End

WESTINGHOUSE TO BUILD SMALL MOTOR PLANT

The Westinghouse Electric Corporation will build a new plant for the production of small electric motors in Union City, Indiana, it was recently announced by C. C. Shutt, manager of the Westinghouse Small Motor Division, whose headquarters are at the Division's main plant in Lima, Ohio.

The new plant will be a modern one-story structure containing both manufacturing and office space. When in full operation the plant will employ approximately 500 men and women. Production is expected to start late in 1951.

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Designed as a valuable aid in production and efficiency, just the type of sturdy bench woodworkers need.

Imported from Finland, made from selected woods, 2 iron bench stops, iron screws and a handy drawer.

Delivered knocked down for easy shipment.

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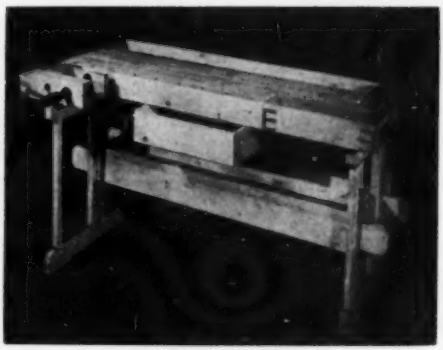

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Bigger in table size, distance from blade to fence, in-feed table surface, and depth of cut . . . faster to use with the quick-set, lift-off, double-locking rip fence, and smooth blade controls . . . built throughout with the precision of metalworking tools . . . this Atlas 10" saw is ideal for intermittent or production sawing. Ask your Atlas jobber or dealer for full particulars on all the outstanding features including:

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MATCHED PRECISION TOOLS FOR WOODWORKING AND METALWORKING

THE MANUFACTURE OF STROMBERG-CARLSON CABINETS

By DAVID S. COOK

ONE OF THE most fascinating stories in Stromberg-Carlson radio and television production centers around the cabinet shop. The shop is in a building adjacent to the radio and television assembly division of the factory. Here the cabinets are made with painstaking care and skilled craftsmanship.

Although the beautiful furniture style cabinets in mahogany and avodire veneers are manufactured in mass production volume, each cabinet receives individual attention, including hand rubbing of all surfaces. Each is subjected to a rigid inspection, and must meet high quality standards before it is passed.

The men in the cabinet shop are experienced veterans, skilled craftsmen who take pride in each piece of work. Many of them have been with Stromberg-Carlson since the first days of radio manufacture, and have made a career of fine cabinetry.

Avodire and mahogany lumber are carefully selected. The styling of the cabinets is created by the foremost designers in the field. Construction and design of the cabinets are aimed at not only making them beautiful pieces of furniture, but functional as well. The finest spirit of traditional design is combined with the exacting requirements of modern electronics and acoustics.

It takes approximately one month for a Stromberg-Carlson cabinet to travel through the shop—from the initial kiln drying to final inspection. After the lumber is selected, it is dried in conveniently located kilns to bring the moisture content to the proper percentage for manufacture into long life, warp-free cabinets.

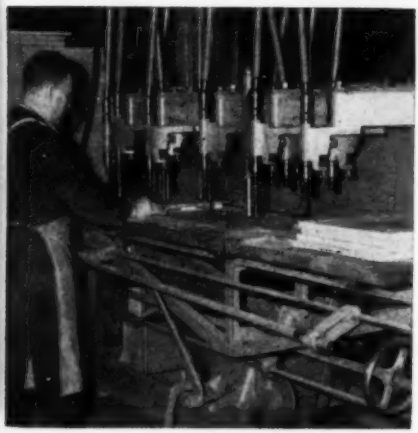
Rough ripping to prepare lumber for further machining. Here lumber is cut to rough dimensions.

The stock cutter calls on his years of experience in lumber selection to choose the actual woods which will go into the manufacture. He rejects the inferior woods, and in his position is able to help maintain the Stromberg-Carlson reputation for quality.

The first machine operation on board stock is a preliminary cutting to rough dimensions. The operation, called "rough ripping," prepares the lumber for the finer machining which follows. To get a true surface on which to begin the finer machining, a facing operation is perfomed on one side of the board. This gives a smooth, true surface. With this surface as a locating base, the boards are planed to the required thickness, jointing on one edge for a straight surface.

The pieces are then molded, grooved, or tenoned and cut to proper size. After these operations, great care is taken to use the proper grade of sandpaper to secure the correct surface.

By this time the future cabinet part is ready for the double-end-tenoner which performs several operations simultaneously on the same piece of lumber. Some of these operations are cutting to finished dimensions, tenoning, relishing and jump-dadoing. Combining several operations on the same setup insures accuracy. Great care is taken in the operation of this machine which holds to close tolerances on finished dimensions, within a sixty-fourth of an inch under the guidance of a skilled operator.



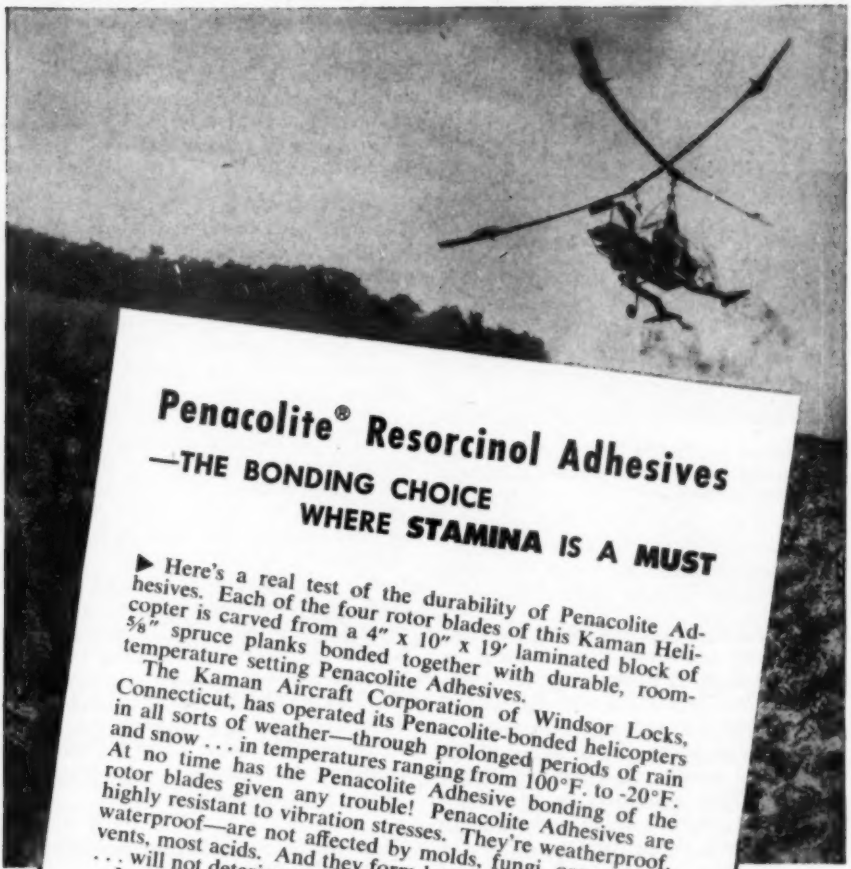
Panels are put through this boring machine, making final assembly easier.

Routing out the openings for television dial and picture tube.

Only carefully selected matched veneers of swirl mahogany, ribbon striped mahogany, avodire, oak and maple are used in our cabinets. They are machined in much the same manner as the solid stock.

The wood is now ready for the router which cuts out sections of the panel in which the television tube and dial will appear in the assembled receiver. Fancy veining, drilling and hinge cutting are among the routing operations.

Panel stock and solid stock are now subjected to the double spindle shaper which calls for a great deal of operational skill to cut the stock without spoilage. The double spindle shaper employs a high speed shaper knife which can cut difficult patterns on cabinet tops. The rough top is mounted



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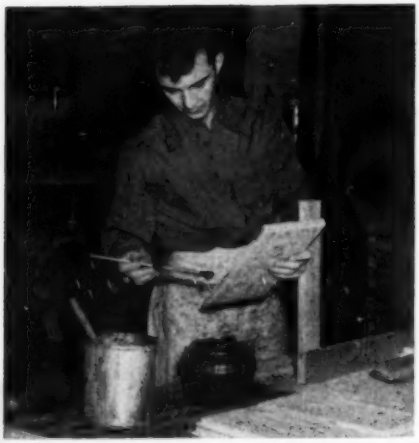


Glue being applied to joints before pieces are placed in air presses and electronic press for bonding.

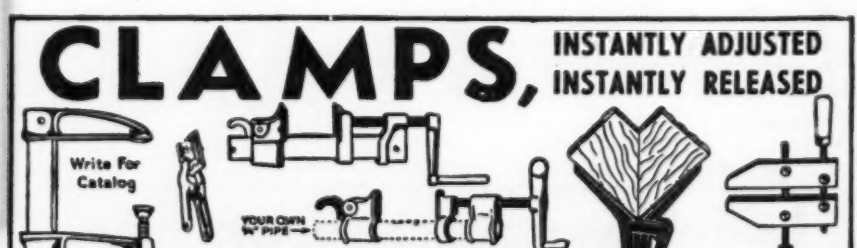
on a form and the high speed shaper knife follows this form in the same manner as a machine shop profiler.

Several sanding operations—the vertical sander, automatic drum sander, or manually applied stroke or polish sandings—follow before the finished stock is sent to the sub-assembly department. Here it is glued to one or more pieces to form a small sub-assembly of the console. This operation is performed on a "glue wheel," which looks like an old-fashioned water wheel. After the glue has been applied to the edges of the stock, it is placed on a frame work, clamps tightened to the precise degree of tautness. The wheel is then rotated to the next position. By the time the wheel has made one complete rotation, the clamps are ready to be removed from the first glued part and the process is complete.

The cabinet pieces are now ready to be assembled, and move to the air presses, an electronic machine, for this operation. These modern machines replace hand-operated wooden presses. The cabinet worker, after applying the glue to the sections and fitting them together, slips them into a special press where compressed air holds the pieces tightly in place. The back of this press is a wire netting, something like a window screen, but coarser. The workman closes the device by dropping a similar hinged screen over the front of the cabinet. The switch is flipped, and in thirty seconds the cabinet is firmly bonded, the glue dried by the high-frequency waves that are shot through it. Possibility of damage due to the considerable handling required by the wooden presses is eliminated. The cabinet is then cleaned, hand-sanded to a fine finish, and any irregularities corrected. It is now ready for the final finishing operations.

(Continued next month)

Time wasted is existence; used it's life.
—**Specialty Salesman**



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Ever since it was formed, this furniture company (name on request) has used BEHR-MANNING Coated Abrasives in its sanding. Occasional trial of competitive abrasives has merely demonstrated the company's good judgment in its initial selection, further confirmed by the many years of continuously excellent BEHR-MANNING service.

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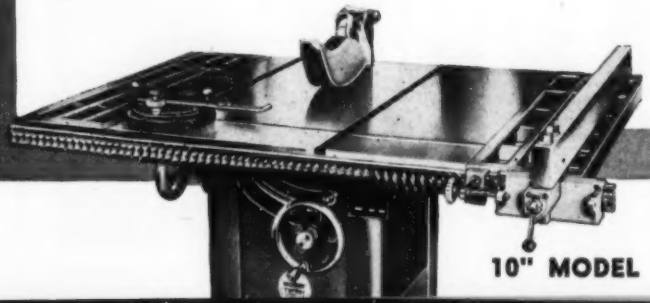
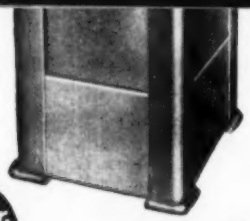
Tilting Arbor Saws

9" MODEL

Capacity 3⅛". Table 23" deep x 19" wide. Speed 4000 r.p.m. Saw guard with splitter and 2 anti-kick back pawls. Cast aluminum rip fence is easy to adjust and assures accurate work without necessity of a test cut. Graduated support bar, adjustable pointer and micro-adjustment simplify setting up.



10" MODEL



Capacity 3⅛". Table 26¾" wide x 32½" deep with front expansion. Speed 3800 r.p.m. Saw arbor takes up to 1" wide Dado. Triple "V" Belt. Safety guard can be removed quickly by hand screw. Rip fence locks front and rear. Spring loaded support bracket keeps fence aligned with blade while setting up.

NEW 12" MODEL

Capacity 4¾". Table 48" wide x 38¾" deep. 5 h.p. 3 phase motor or 3 h.p. single phase. Dado capacity 1½" wide. Saw speed 3600 r.p.m. New rip fence locks front and rear, micro-adjustment "T" slots for miter gauge. New improved safety guard and splitter. Multiple "V" Belt Drive.

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PART 3
BY S. L. SWENSON

This is the last of the series of three articles which Mr. Swenson, Product Engineer, Kimpak Crepe Wadding, Kimberly-Clark Corp., Neenah, Wis., has written for WOOD WORKING DIGEST. If you have questions or wish further information, write directly to Mr. Swenson. This last article covers "Tables and Occasional Furniture."

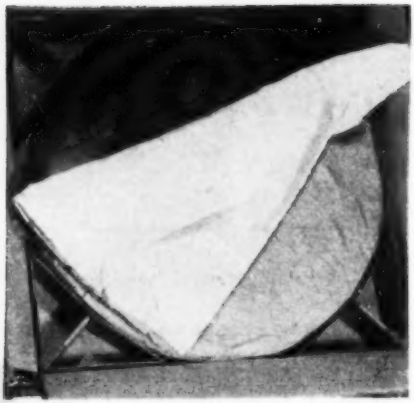
WHILE UNIT value of small tables, novelty and occasional furniture is often relatively low, they are susceptible to considerable costly damage. Don't overlook the fact that a small table may be as important to your dealer in the sales volume picture as the larger pieces. A dealer will tell you that "appearance-value" is highly influential in moving occasional pieces. How good-looking is the piece you make? This is important, of course. More important, is how good-looking is that same piece on the dealer's floor!

A large share of shipping damage today is finish damage. And the small tables and occasional pieces are affected more perhaps than any other class of furniture. Good protective materials, easily applied and modestly priced, are so readily available to furniture plants, that no piece worth making, and shipping, should go unprotected. Organizations like the Railroad Consolidated Freight Classification Committee, National Furniture Traffic Conference, Forest Products Laboratory, and several manufacturing organizations, have stressed the economic value of adequate protection. Many manufacturers still fail to recognize the long-term benefits, even on a selfish dollar-wise basis, of good furniture protection.

Don't Skimp on Finish Protection

Whatever material you use, see that it is large enough, place it correctly, and fasten it firmly in place, so it won't shift and stop working for you. Good thin materials like cotton barrier sheets, unwoven cloth, pliofilm, creped cellulose wadding, and heavily waxed krafts are available to do a first-class finish protecting job. Some of the cushioning materials, such as crepe cellulose wadding, are available with a sealed-on back up sheet of kraft paper in varying weights. This back up paper though primarily intended for strength and wear resistance, is excellent added protection, with the plus value of a surface to fasten on gummed tape.

Carriers consider that "corrugated board in direct contact with finished or upholstered surfaces is abrasive". So are most of the chipboards against highly polished surfaces. Chipboard being made from considerable reclaimed pulp, waste, and newsprint stock contains minute dust and grit particles, as well as ink and dye specks. Under pressure and rubbing, such material invariably dulls furniture. Use a recom-



Lazy Susan, Lullaby Furniture Co. Surface protection of expensive mahogany cabinet using Kimpak. Notice bracing in corners of package.

mended non-abrasive finish protecting material to protect all finished surfaces that contact the container, corrugated forms, or heavy paper surfaced pads.

Protect surfaces, and especially corners and edges, from the binding and the "biting" action of steel strapping. A single wall thickness of a 200 lb. test container is not enough protection. Apply double and triple thickness, contact corrugated pads, at corners and edges under steel strapping. Or use heavy padding at such spots. Wood cleats or runners at box edges, of course, make such steel strap protection unnecessary.

In drawing up steel strapping against corrugated fibreboard or other padding, apply only enough tension to bind it up snugly. Any excess tension, crushing the fibreboard, does no useful work and is the start toward damage.

Good Tape Sealing

This not only stiffens and strengthens your container, but cuts down infiltration of dust, cinders and sand grit into your package. It is surprising how readily abrasive dust finds its way into even well prepared packages. When the grit finally comes to a resting place, and it has usually lodged in some tight fitting quarter, such as next to your polished furniture. Here is where finish protection padding quality will tell. If your non-abrasive barrier is truly that, you need have no qualms. However, if it is just another sheet of kraft paper, then let the furniture finish beware—it is in for some rough treatment.

Pedestal types of furniture, as a rule, should be suspended in packages, whether required by CFCC rules or not. Good judgment is often required by a packer to prevent cracking and loosening of joints due to strain of unexpected rough carrier treatment. Keep the long bases and fragile supports away from the stresses imposed on packaged furniture. This means that use of a suspension system. Corrugated board, wood cleats, even cushioning pads properly placed can actually keep the legs, base, or pedestal away from the inner surface of the container. Skids, runners,

Sealing Kimpack around drop leaves of Phoenix Duncan Phyfe table. Table made by Phoenix Chair Company, Sheboygan, Wis.

or trays are often of value in minimizing leg and pedestal injury. Usually their cost runs more than a well designed suspension form. However, look into both systems; they save you costly damage. Novelty and occasional furniture, because of their lighter than average-weight, and fragility, are frequently more vulnerable to carrier damage than the heavier pieces. Protect them if you value them.

Clearance forms and pads are a must for galleries and other protruding furniture parts. Just as corners and edges of furniture take a beating unless well protected, so do any unusual portions that project beyond the regular contour of the furniture. Build up forms or paws of corrugated fibreboard. Roll, fold or bend pieces into suitable shape so your item is protected. You will find many packaging techniques utilize die cut pads for protection; this costs a little more, but may be worth it. Pads, blankets and cushioning materials are often applied and used as is, where stresses can be expected, or they may be doubled and tripled in thickness to suit the peculiar requirement.

Secure hinged parts, loose pieces, drawers and other movable items. There are strong, non-marking tapes available which can do this job for you. Otherwise use a stiffened, but cushioned form, to hold your item securely. If you let the loose appendages bang around in transit, they will look like that is what happened when they get to destination. Hinges get loose, screws fall out, ends and corners of the item get banged and bruised.

Drawers can be fastened to stay in place easily. There are patented soft metal fasteners which can be inserted between the drawers and bent to hold the drawer in place. But, when using such equipment, if you value drawer edge condition, pad the fastener with

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a thin sheet of kraft-backed creped cellulose wadding. Other methods are satisfactory too. Try the non-marking adhesive tape. Or wood screws, placed from the under side do very well, but take a little more time in application.

Glass tops and trays need protection beyond the call of average duty. Give glass extra shelter, extra buffers, extra padding. Glass needs real precautionary shielding—as anyone can testify who has opened a mediocre, glass containing package, after shipment. The rattle of shattered glass in a furniture package, is a disheartening thing any time. To your dealer, who may already have the item sold, or have visualized his profits on it, it is the start of a "slow burn" and with you at the receiving end. Don't let the customer down, your dealer, or yourself. Glass on furniture does not have to be broken a "certain percent of the time." You can fix it so it won't be—if you want to.

When separate glass items—trays, mirrors, and the like—are packaged, first cushion with thick, soft padding all around. Then pack the item in a separate, corrugated fibreboard "book-fold" container. Place this separate wrapped package, taped seam surface inwards, against a smooth unbroken furniture surface within your regular furniture container. Fasten the sub-container (holding the glass item) securely to the furniture. Wrap it with corrugated fibreboard stripping to hold in place and seal well. Or wrap completely in two directions with tough masking tape. In any event, do not let the "glass package" move around. The outer container, holding the main furniture piece, must be so designed that at least 1" of clearance remains between the inner surface of the container and the "glass package". Lastly, mark or label your main furniture

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package (and the sub-pack) with "GLASS" in big red letters on every side.

When glass is affixed to the furniture, cover the entire fragile surface with deep, soft padding material. Then cover over this entire vulnerable area with corrugated fibreboard of minimum 200 lb. test, and fasten in place securely to the furniture. Be sure 1" minimum clearance remains between the glass protected padded surfacing, and the inner surface of the main furniture container. Again mark or label "GLASS" in bold, red letters on every surface of your package.

The End

Horse sense is something that a horse has that keeps him from betting on people.

—Armstrong Saw Engineer.

WD New Literature Section...

F.P.R.S. PROCEEDINGS

The Forest Products Research Society announces the release of the fourth volume of its Annual Proceedings. Slightly over 500 pages in length, the cloth-bound book contains all 44 of the technical papers and discussions presented at the Fourth Annual National Meeting of the Society. Held at Portland, Oregon on June 26-29, 1950. Maintaining the format of the three preceding volumes, but with added illustrative material, it contains 400 pages of technical data, official Society business reports and the complete roster of membership as of December 1. Like its predecessors, this volume will become a valuable reference work covering the entire field of forest products from logging through utilization.

DELTA CATALOG

A new 60-page Delta catalog has just been issued, according to word from the Delta Power Tool Division, Rockwell Manufacturing Company, Milwaukee 1, Wisconsin. The catalog pictures and describes Delta-Milwaukee woodworking machines and other tools in the broad Delta line of 53 machines, 246 models, and more than 1300 accessories.

This new AB-50 catalog gives you the detailed information you want before you buy a power tool. Product specifications. Prices. Motor recommendations. Accessory listings. Other specific facts.

A free copy of the AB-50 catalog can be obtained from Delta-Milwaukee dealers or by writing direct to the Company.

ADVANTAGES OF BULK ADHESIVE DISCUSSED

A new eight-page pamphlet describing the advantages of using URAC 180 Resin Adhesive has just been published by American Cyanamid Company.

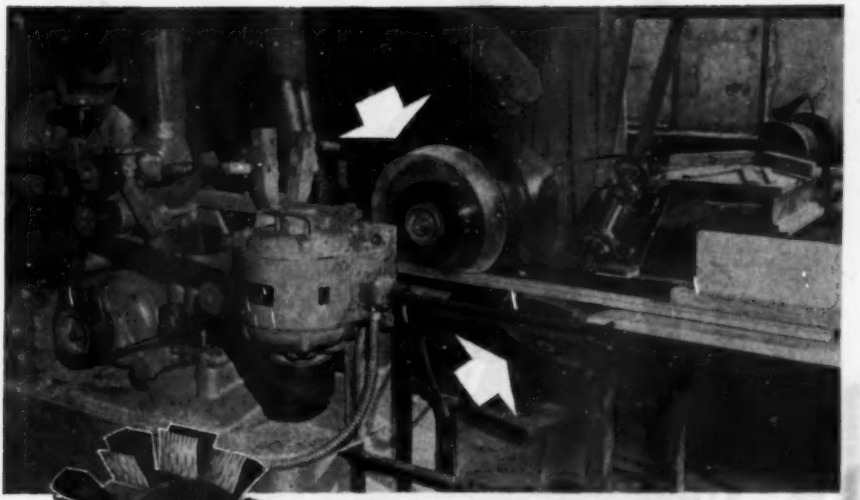
This attractive two-color pamphlet utilizes drawings to illustrate the way in which time and money are saved by using this high-solids' resin solution (66%, P.M., M.A., Test Method) either in drums or in bulk. The versatility, stability, and quality-bond indicated for URAC 180 include hot or cold plywood pressing, veneer bonding, lumber-core gluing and high frequency wood bonding.

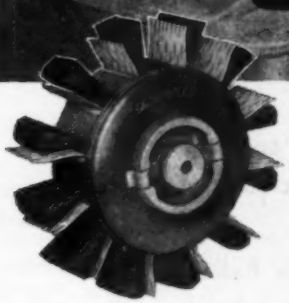
Copies are available without charge from American Cyanamid Company, (WD) Plastics Department, 30 Rockefeller Plaza, New York 20, New York.

CUTTER CIRCULAR

The Sterling-Cutter & Mfg. Co. have described their cutters in a 3-page folder. In addition to listing the types of cutters available, they have illustrated them, given complete specifications and prices. Especially helpful is the diagram of cutter shapes.

For further information write the above Company, Dept. WD, P. O. Box 1662, Rockford, Ill.





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Modern Trends Furniture, Houston, Texas, installed two Sand-O-Flex brush-backed sanding wheels on their sticker machine and reports that the sanders paid for themselves within the first week. N. A. Clairfield, president of the firm, writes, "We were running a new type of moulding for a new group of tables which we were introducing. This moulding was concave shaped and we had tried several ways to sand it. We found Sand-O-Flex sanders did the best job. When a piece of moulding fell to the floor it was sanded thoroughly enough for our finishing department.

"Our regular routine is for the tables to be sanded by a crew that is employed in that department, which takes from 12 to 15 minutes per table. We can actually say that Sand-O-Flex sanders save us approximately 10 minutes per table since the sanding crew does not have to sand the moulding which always takes the longest time as it is the most exposed part of the table. We are now trying to use this same operation on a flat surface and feel that it will be even more successful."

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WWP Finishing Section

The potential for the HOT-SPRAY LACQUER PROCESS

BY J. B. WIESEL

IN THE OPINION of a number of prominent lacquer manufacturers, the hot-lacquer process offers the same challenge to protective coatings as cold lacquer did when it was introduced twenty-five years ago.

Today, more than 50% of all of America's new cars are finished with lacquer. Seventy-five per cent of all wood furniture is finished with lacquer. And countless other products, from lighting fixtures to oil burners, are lacquered. Yet this great growth did not come overnight, or even within a year or two. Much skepticism existed, among both producers and users. But the slow process of trial and error eliminated the early difficulties and shortcomings, and enabled users to capitalize to the full on the many advantages of cold lacquer.

The hot-lacquer process is today in much the same position. Its many advantages and the unique economies it offers are obvious. Much of the groundwork has been laid, the trial-and-error process is well under way, and its use in industry is increasing at a phenomenal rate. I would like to present to you here the picture of the hot-lacquer process as it stands today, and to take a look at its probable potential as a major protective coating.

The hot-spray process was first investigated in the late 30's, but until several years ago the lack of adequate mechanical equipment — circulating spray guns and heating units—made the process of little practical value. In other words, hot lacquer was ready for its initial trials as long as ten years ago, but the proper equipment to apply it economically wasn't. With the end of World War II, however, the equipment makers were able to devote some time and attention to development, and so today the situation is entirely different. A number of people, with the applica-

tion of great quantities of imagination and ambition, have developed highly efficient equipment that delivers lacquer to the gun with negligible temperature drop, and the types of guns best adapted to handling and spraying with least loss of heat and material. And the cost of this equipment is surprisingly low in terms of the production economies it makes possible.

Some interesting sidelights on the extent of these equipment problems, and the ingenious ways by which they have been solved, are given in a forthcoming article entitled "Problems Conquered to Make Hot Lacquer a Success," by James A. Bede of Bede Products. (This article is scheduled for a later issue of Wood Working Digest.) On the subject of heaters, Mr. Bede says:

"It was necessary to develop a thoroughly practical, simple and safe lacquer heater, one that was not too complicated for the sprayers to operate. This we now have. In fact, there are a number of efficient lacquer heaters on the market. We also had to develop a practical, trouble-free circulating mechanism to circulate the lacquer through the heater to the spray gun and return. The noncirculating paint heater is not adaptable for lacquer use except in rather isolated cases. However, to develop a circulating mechanism was not a simple thing. Pumping hot lacquer presents a number of problems beyond that of pumping cold lacquer. For example, to keep the shaft seal properly lubricated was quite a problem, due to the heat generated and the hot solvents coming in contact with the seal. Also, a circulating system had to be devised to enable the pump to operate slowly, because the hot lacquer does not have the lubricating property that cold lacquer has. Another critical problem to be licked was finding a fluid hose which would stand up to the hot solvents. This, too, has been overcome. There are now fluid hoses on the market which will stand up to hot lacquers.

One of the principal drawbacks to lacquer has been the limited solids that can be applied per coat, as compared to the thickness of film deposited per coat by synthetic enamels. During the past ten years, the solids content of the average cold lacquer has been increased rather markedly by specific formulations through the use of lower viscosity raw materials and high-solvency solvents. Most cold lacquers now vary from 20 to 30% solids, with a few lacquer manufacturers actually offering 35% high-solids lacquers available for specific purposes.

The hot-spray process takes the idea of increased solids one step further. In this process, reduction to spraying viscosity is achieved by heating the lacquer to thin it out, instead of depending entirely on formulations. Basically, there is no difference in type of finish, or composition of solids, between hot-sprayed and cold-sprayed lacquers. The solvents are different; solids applied are higher; and the number of coats are correspondingly fewer.

Users of the hot-spray lacquer process find that they spend less for the finish being applied. They realize savings because:

1. Solids are higher and the thickness obtained for each pass is greater. When the lacquer is warmed or heated, the gun can spray it at higher concentrations. A lacquer, which at room temperature cannot be sprayed above 21% solids, can be sprayed at 30% solids when heated.

2. Solvent waste is lower. Obviously, this higher per cent of solids means less solvent is needed. A typical lacquer at 21% solids uses up to 3.76 lbs. of solvent to lay down one pound of solids. At 30% solids, only 2.33 lbs. of solvent are used for each pound of solids. Therefore, 61.4% of the solvent needed at 30% with hot-spray techniques is

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wasted by continuing to spray cold, at 21%.

3. Coverage per gallon is increased. If one gallon of lacquer, applied cold at 21% solids, will finish 100 units, then one gallon of lacquer sprayed hot (30% solids) will finish 143 units (with the same thickness of film).

4. Fewer coats are needed. Frequently three coats are required to obtain sufficient finish to beautify and protect a product. Experience has shown that by spraying hot, at higher solids (30% instead of 21%), two coats will give the same satisfactory amount of finish.

5. Capacity of the finishing plant can be increased. Reduction in number of coats from three to two is equivalent to adding 33% extra capacity (which would mean one-third more floor space, more guns, more operators, more compressor capacity). Similarly, reduction of a two-coat finishing schedule to a one-coat, which frequently becomes possible, is equivalent to adding 50% to the existing finishing capacity.

6. The finish has better flow-out. All existing evidence indicates that heavy films flow out better than thin ones. The hot spray technique not only makes heavy films possible, but encourages this. There is a natural tendency to apply heavy coats, as a result of the inherent higher solids. This means reduced orange peel and less expensive sanding operations. Rubbing and polishing requirements are, therefore, sharply reduced.

7. The finish has less tendency to sag. Lacquers applied hot, at correspondingly higher solids, have less tendency to sag than lacquers thinned for applying at room temperatures. For example, one lacquer applied to a vertical surface at room temperature sagged when a film thicker than 0.001 inch was applied. The same lacquer solids, applied at 160°F. in a hot-spray solvent formulation, did not sag when 0.002 inch of film was applied. Sag resistance was more than doubled.

8. Blushing is eliminated. In some areas, blushing is a major problem, particularly during humid weather. Moisture condenses on the freshly sprayed lacquer droplets as they are cooled by the rapid evaporation of solvent, and clouds the film. When lacquer is sprayed hot, instead of at room temperature, it is virtually impossible to create a blushing condition.

In the furniture industry lacquer has long been the preferred finish because of its beauty, durability, long life, and ease of application. The new hot-spray process is now of definite interest because of its economy. It makes use of the same basic types of lacquer, with the elimination of most of the low- and medium-boiling solvents, and the same solids composition, with the resulting same high-quality finish. By spraying the lacquer hot, a much thicker coating is applied. In fact, in many instances, "now, once around is enough." The result is an over-all saving of 25 to 30% in finishing costs without any sacrifice in quality.

All of the positive advantages of cold lacquer are retained through the use of the hot-spray method of application. It is estimated that at present 75% of all wood furniture is finished with cold lacquer because of the following well recognized advantages: (a) Lacquer last longer. (b) The natural beauty of the wood is retained and enhanced. (c) There is no other way to obtain the rich effect that sells furniture on sight. (d) Repairs and minor touch-up jobs are less costly and more satisfactory. When necessary, the lacquered finish can be completely removed by solvents, and the operation is simple. Lacquer is more stable in storage than other finishing materials, and no catalysts or other products which do not

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contribute to the ultimate value of the coating are needed to make the lacquer finish dry.

The hot-lacquer process offers possibilities of supplanting some of the finishes now used in furniture fields, such as varnish and other synthetic enamel finishes.

Toughness and cold-check resistance can be increased when hot-spray lacquers are formulated specifically for high-solids application. It is possible to use higher viscosity raw materials, thus providing films with greater cold-check resistance, tensile strength, and toughness at no loss of solids.

The following case histories of satisfied users of the hot-spray process indicate the increasing acceptance by the furniture industry of the hot-spray lacquer method of application.

1. A California furniture factory reports: "The finishing foreman is very enthusiastic about the use of hot lacquer and stated that he is saving 50% of the rubbing costs which they had when they used cold lacquer. One coat of lacquer is being applied over sealer on furniture made from all wood except mahogany, walnut, and oak. These woods receive two lacquer topcoats because of their large pores."

2. A lacquer producer to the furniture industry says: "Yesterday, we observed the wooden panels finished last January and measured the film thickness of the metal panels prepared at the same time. Insofar as the wood panels are concerned, it still shows that one coat of hot-spray lacquer is equal in fullness to two coats of cold-spray. We feel confident that the after shrinkage of hot-spray lacquers will not be excessive. The next day all cabinets were rubbed, and they dried to the entire satisfaction of all concerned, which, frankly, we didn't expect. The owner of this furniture plant was entirely satisfied with the build on one coat of cold and one coat of hot and has since decided that one coat over sealer will give him the results that he needs. They also were satisfied with the luster of the cabinets after rubbing."

3. Another satisfied user of hot-spray lacquer states: "We thought you should know the excellent results we are having with the hot-spray process in applying lacquer finishes to our products. We have doubled our production on the spray line. With the cold-spray process we applied six coats of lacquer. With the hot-spray process we apply two coats and get better coverage. We also use 50% less thinners, and on top of this, we have aso reduced re-work to a minimum."

4. A large furniture company recently reported: "Obtaining a coverage of 408 square feet per gallon of hot lacquer, whereas formerly we averaged only 335 square feet with a gallon of varnish."

5. Another furniture lacquer manufacturer states: "We are getting some very satisfactory results with hot lacquer and have several customers now using it. Our customers who are now using hot lacquer apparently are having no difficulty whatsoever. We believe hot lacquer will continue in its acceptance by other firms as it becomes more widely known and will take its place as a permanent finishing material."

6. A prominent lacquer producer writes as follows: "We have been selling a considerable quantity of hot lacquer over a period of a year. As you know, varnishes generally run from 40 to 50% solids, are rather heavy in body, and give good build in one coat. These varnishes, however, dry fairly slowly, do not have very good hot-print resistance, and pick up considerable lint, dust, and dirt before they set up, so

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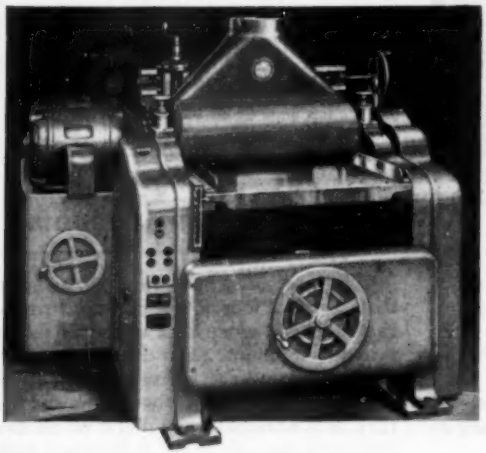
BUSS CABINET SURFACERS

READILY MAINTAIN TOLERANCES AS CLOSE AS .002"



BUSS No. 44 Single Surface Cabinet Surfacer — The complete line contains a type and size for every production set-up. Singles — small, medium and large; Double Surface type and the No. 55 for surfacing rough lumber. Bulletins on request.

Fine finished planing is produced by BUSS cabinet surfacers, in the hands of the average operator, with greater consistency than with any other planer. The reason for this is, that in addition to being built throughout for precision production, BUSS Surfacers are equipped with semi-automatic controls (exclusive BUSS features) which make it easy for the operator to get perfect settings, almost instantly.

For the greatest production of the kind of planing that saves time on following operations, investigate BUSS Cabinet Surfacers. There's one that ideally suits your needs.

ELIMINATION OF SHAVING PRINTING"

Check your dust removal system. A weak or inadequate system is frequently the cause of this trouble. Further insurance against shaving printing is provided by the "Shearing Bar" — an exclusive, BUSS feature. Write for further details.

PLANER SPECIALISTS EXCLUSIVELY

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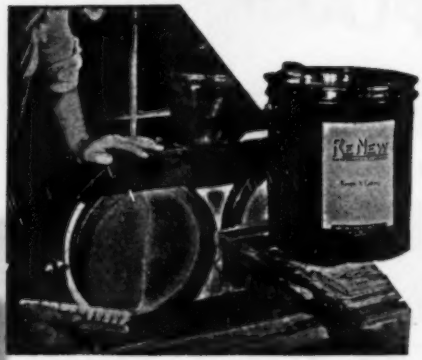
ReNew GIVES NEW LIFE TO SAND PAPER AND CUTS SANDING COST 50%



Keep your sandpaper cutting for you with ReNew. Apply . . . let it dissolve the pitch or resin . . . then brush it off with a scrubbing brush. It's so easy and quick and makes your sand paper last at least 3 times as long.

ReNew increases sanding machine efficiency . . . paper lasts longer . . . less changes necessary.

ReNew is non-inflammable.

Buy it in 55 gallon drums at $2.85 per gallon, 5 gallon steel pails at $3.00 per gallon, or 1 gallon cans at $3.25 per gallon, F.O.B. Moline, Illinois.

MOLINE PAINT MFG. CO.

MOLINE • • • • • ILLINOIS

that it is necessary to have a dustproof room to get a clean finish for furniture. These varnish finishes also do not have the tensile strength of nitrocellulose lacquers. Nitrocellulose lacquers dry fast and hard in a number of minutes and are tack-free in a few minutes so that they do not pick up lint."

7. A hot-spray equipment manufacturer states: "We are receiving queries from the furniture industry daily which lead us to estimate that at least one consumer per week either has switched from varnish or synthetic finish to hot lacquer or is about to change."

From present indications, the hot-spray lacquer process shows every indication of proving of definite value to the furniture industry in reducing overall finishing costs with no sacrifice of quality. In fact, higher viscosity raw materials in many cases can be used in the formulation of the lacquer to improve quality.

It is interesting, by the way, to note that some of our European contemporaries moved somewhat ahead of us on this development. Even during the war, the hot-spray process attained wide use abroad. In Sweden, where fine furniture is a national pride, 90% of all the furniture manufactured is finished with hot-spray lacquer. In Holland, hot-spray lacquer is highly regarded, and 60% of all furniture is finished with this process. The war-time development of hot-spray lacquers in Europe was born of necessity, because some of the solvents used in lacquers were scarce and costly and the hot-spray process saves up to 50% of the total solvents needed. But the widespread use of this process today is proof of its value in normal standard operations. It is estimated that there are today a total of 3,000 hot-spray units being used in general industry—2,000 circulating and 1,000 non-circulating.

This article is part of a speech pre-

FAMOWOOD

FAMOWOOD PLASTIC

APPLIES LIKE PUTTY
Doesn't Shrink—Sands Easily
Takes Spirit Dye Stains Freely

FAMOWOOD is the plastic type wood putty that you use "right out of the can"—with no *mixing or other preparation.* . . . TEST IT—you'll find it works easily and STAYS PUT. That's why it's so highly desirable for filling even large holes and cracks.

Manufacturers who finish wood products of almost every kind stay with it year after year. It's been "standard" with many companies who started with it when it first came on the market over 10 years ago. . . . FAMOWOOD is a production product: CUTS DOWN SPOILAGE AND WASTE (pays its way on this fact alone). Then, too, it CUTS PRODUCTION COSTS—SPEEDS PRODUCTION—HELPS REDUCE LABOR COSTS. *Workmen like its quick action.* WATERPROOF and WEATHERPROOF when properly applied. . . . Sticks to clean surfaces like porcelain, tile, glass, concrete, etc.

TEST IT IN YOUR COLOR: White — Fir — Walnut — Mahogany — Birch — Oak — Red Oak — Maple — Redwood — Tupelo — Cedar — Alder — Ash. . . . CONVENIENTLY PACKAGED — 5 sizes — 6 oz. to 11½ lb. (gallon) cans.

Use FAMOGLAZE for filling HAIR-LINE CRACKS and MINOR DEFECTS in boat hulls, musical instruments—fine cabinets and case goods, etc. Works easily like FAMOWOOD—leaves a beautiful PORCELAIN-LIKE FINISH. . . . Sticks to any clean surface.

FAMOSOLVENT keeps both products in top-working condition.

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Manufacturers of FAMOWOOD, FAMOGLAZE and FAMOSOLVENT

9118 South Main Street - Los Angeles 3, California

sented by J. B. Wiesel of the Hercules Powder Company before the Wood Office Furniture Institute. We expect to present a second article on the equipment and process of hot-spraying in an early issue of this magazine.

The End

HELP FOR FURNITURE MANUFACTURERS

A new brochure from Ever-Level Glides, Inc., explains the principle of their new automatic adjusting glides. The manufacturer states that these glides eliminate furniture wobble caused by warped, sagging, sloped or other floor surface irregularities. "Even when furniture is moved, the independent automatic action of Levelmatics readjusts the unit to its new location," the literature states.

These glides operate hydraulically, utilizing silicone "bouncing" putty for their action. Levelmatics, trade name for the glides, are made in nail and screw studs for easy installation in either wood or metal.

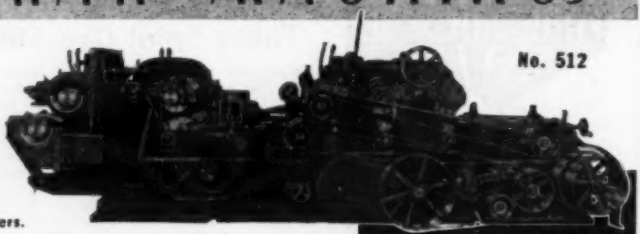
Write the Company direct at 210 Spring St., New York 12, N. Y., for further information.

SERVICE AWARDS

"How Service Awards Promote Loyalty," is the title of a new booklet on service awards in business and industry which has been published by the American Emblem Company. A wide variety of pin and button awards are reproduced. This booklet was designed to reveal to employers who have not used emblem awards in the past, the various types and designs now part of the loyalty building programs of some of the leading industrial, business and institutional organizations in the United States. A copy will be sent free upon request. Write to The American Emblem Company. Inc., Dept. WD, Utica, N. Y.

NEWMAN MACHINES

Newman



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Capacity: 16" and 24" wide, 8" thick.
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8" dia. cutting circle.
Six 12" dia. feed rolls.
Single and double profilers.

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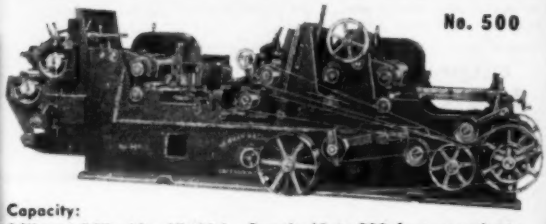

Capacity:
14" and 24" wide, 6" thick. Speeds 40 to 200 feet per minute. 7" cutting circle. Six alloy steel feed rolls. High carbon special alloy steel cylinders. Single or double profilers.

The ball bearing NEWMAN 71 (shown below) will grind all sizes of cutter heads. Table is 33" long by 9" wide with horizontal travel of 25" and is heavily ribbed to maintain accuracy over entire travel. Maximum cutter head swing is 11".

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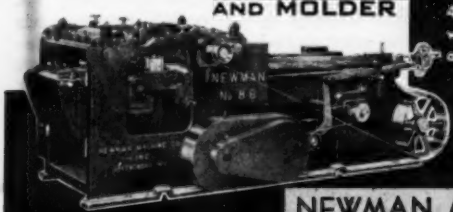
Ball and Roller Bearings

No. 55 AUTOMATIC PINEAPPLE FEED TABLE

The NEWMAN 55 feeds stock automatically to high speed planers and matchers up to 450 lineal feet per minute. Capacity: 30" wide, 8" thick. All adjustments and controls are centrally and conveniently located.

No. 8-B PLANER, MATCHER AND MOLDER



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The NEWMAN 8-B planes 22" wide and 8" thick, joints 4" thick and will match 14" wide. 6" diameter feed rolls. Speeds of 30, 50 and 75 feet per minute.

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Selecting a wood preservative

By

John P. Leonard

WOOD IS the most adaptable material in the service of mankind. It is found in nearly all parts of the world; it is light in weight, easily worked, cheap (that is, it was cheap until recently), pleasing in appearance and of enough varieties to meet every demand, will absorb shock, withstand heavy stress, is acceptable to paints, glue and other materials and if properly protected will outlast many of the materials used in construction. Because of these favorable characteristics wood is in great demand.

The annual harvest from our American forests has been much more than the annual growth. Because of this over-cutting it is imperative to make the wood we do use last much longer. Ten percent of this annual harvest is used to replace lumber that has decayed in service; some more is destroyed by insects, while still more is discarded because of warping, checking or shrinking.

More and more people are becoming conscious of the value of preservatives and are treating lumber to overcome these losses through decay or insect attack. Because of this great demand on our forests, many smaller trees are being used for lumber; consequently a greater proportion of the lumber is sapwood. Sapwood accepts moisture or solution more readily than heartwood; there is, therefore a greater tendency for today's lumber to swell or warp if moisture is allowed to enter the wood. The dwindling supply of decay resistant lumber and the substitution of non-resistant materials lend further emphasis to the desirability of providing maximum protection. Lumbermen, architects and home owners are accepting this challenge and are demanding a preservative that will help stabilize the lumber while it protects against rot and insect attack.

Dry Rot

A term generally applied to those fungi which destroy wood in buildings and is misleading, for although it describes the appearance of the timber after attack, moisture is absolutely essential to the growth of all fungi. This indicates the importance of water-repellents in any preservative treatment. Most fungi find a moisture content of between 20-30% most favorable for attack. Nearly all lumber has some moisture present, but under good conditions of light, heat and air circulation the moisture content does not reach the desired amount for fungus growth. There are many places around a building where those unfavorable conditions for the growth of fungi cannot be maintained. These are the areas where some treatment is necessary, to act as a watch dog against the invasion of fungus attack.

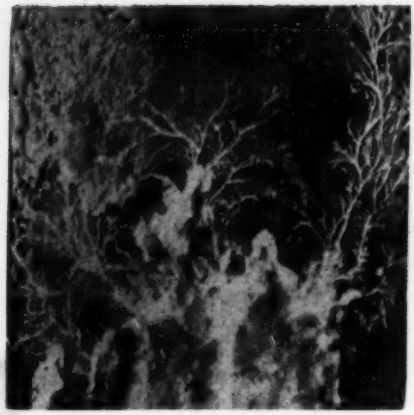

Plate A. Poriaei Vaillantii. Fungus in form of sheets and strands of timber.

How Dry Rot Destroys Timber

Dry rot is a common name for the condition in which certain fungi leave wood after they have eaten away the cellulose or sugars, rendering the wood brittle, powdery and with strength gone. Fungus usually appears in lace-like strands or sheets on the surface or in the cracks in the wood. Note plate A. These web-like strands are fine hollow tubes reaching out to find food, they have the ability to absorb the starches, sugars and other organic material in the wood cells. As they feed and grow they produce "fruit-bodies,"—much like mushrooms or flat pancakes,—which produce millions of minute spores. These microscopic seeds may lie dormant for years, awaiting the right conditions of heat and moisture in which to "germinate" and send out a new set of feeders, another "fruit body" and another area destroyed. Because dry rot requires a moisture content of between 20 and 30%, (moisture in most woods, normally, is below 20%), a good preservative should contain a good water-repellent together with the preservative.

What To Look For In A Wood Preservative

1. It should be non-toxic to higher forms of life, plants and animals.
2. It should be easy to apply, safe to handle and readily available.
3. It should inhibit or materially reduce any micro-biological attack and render the wood unpalatable to boring insects.
4. It should not adversely affect the usefulness of the product treated.
5. It should be economical to use. (Initial cost not a true yardstick of economy.)
6. It should be non-soluble in water or soil, and remain in the wood after the vehicle has dried out.
7. It should give good coverage, good penetration and long service.
8. It should be paintable—that is, furnish a good bond for paint.
9. It should have a water-repellent effective enough to inhibit the transmission of moisture into and out of

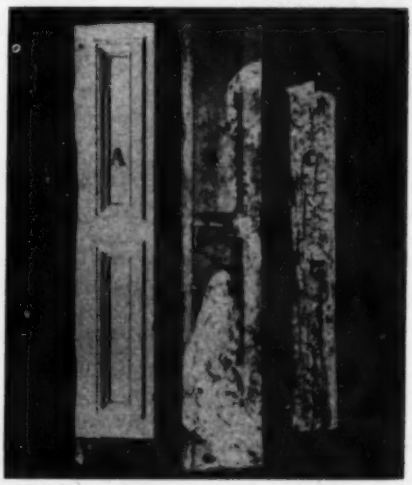

Plate B. Merulius lacrymans. A. Front of panel showing no signs of damage. B. Back of same panel, attacked by dry rot, and showing fungus skins. C. Wood attacked by dry rot, showing cross shakes.

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KARBIDE KING SAWS

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at Less Cost

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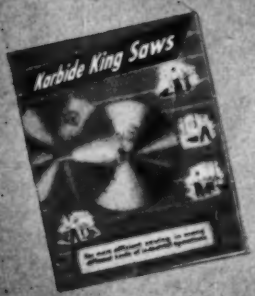

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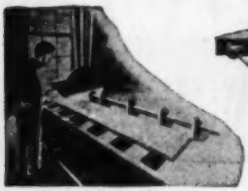
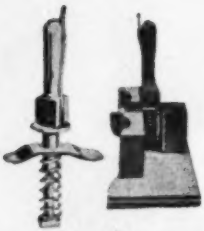


Swing Saw Gauge

Cabinet-Makers Bench



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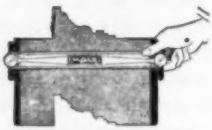
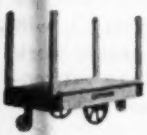


Reproducing Template

Lumber Gauge

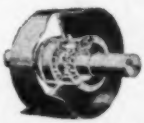
Planer Bolts



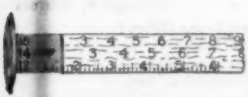
Factory Truck

Moisture Meter

Quick Acting Vise



Ball Bearing Loose Pulleys



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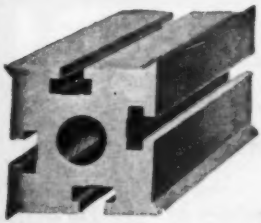
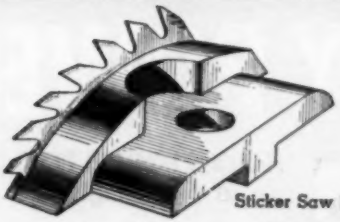


Sticker Head



Sticker Saw Heads

Tenoning Spurs

Sticker Springs

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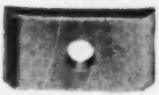
Shaper Knife

Matcher Bits

Balance Scale



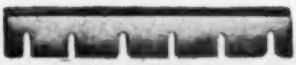
Sticker Caps

Molders Gauge

Milled Knives

Coping Knives

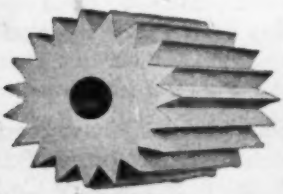
Moulding Knives



Planer Knives

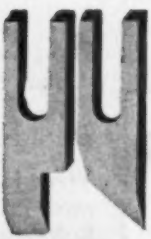
Thin Knives

Shaper Steel

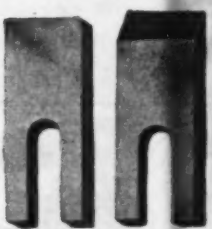


Steel Rolls

Tenoning Knives



Rabbet Blanks



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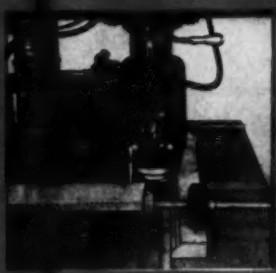
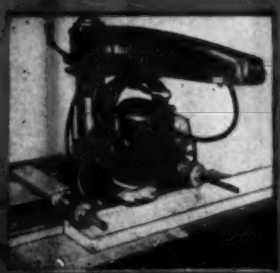


POWER FEED SHAPER



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Write for full information about this new Power Feed now. DeWalt Inc., 41 Fountain Ave., Lancaster, Pa. Subsidiary of American Machine & Foundry Co., New York City.

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timber; the water-repellent should be in complete solution with the other ingredients and be carried into the wood, (not just a surface treatment); it should not prevent the paint from bonding to the wood.

10. The preservative should not bloom —leave crystals or other material on the surface of the wood to interfere with a good paint job.

11. The preservative should have containers plainly marked with contents of preserving ingredients, so that purchaser may know what he is paying for.

12. It should not cause corrosion of metals in contact with treated wood and should not require special protective equipment while being used, and no special skill should be required to produce a good job.

Note in the service index of untreated wood and treated wood in the accompanying graph how much more effective copper naphthenate is than the other preservatives used in this test. It is quite apparent that about one-fifth of one percent of copper naphthenate put in under pressure is superior in preservative value to five percent pentachlorophenol, or 100% creosote, also put in under pressure. This would indicate, from other tests that one-half of one percent of zinc naphthenate would be much more effective than five percent pentachlorophenol. Copper naphthenate and zinc naphthenate therefore have a greater preservative value than the others in this test. The naphthenates have another value in that they blend well with water-repellents, have a greater penetrating value than most ingredients used in the preservative field. Using one of the mineral spirits as a vehicle they do not distort the wood as they carry the preservative and water-repellent into the wood cells, thus reducing the movement of moisture in the wood.

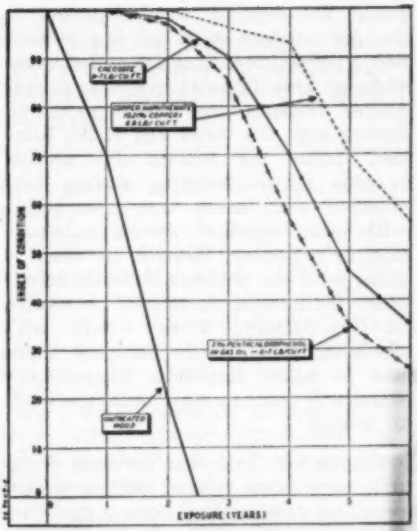

Plate C. Service index of untreated and treated wood on ¾ inch square southern pine sapwood stakes installed in the ground in coastal southern states. Source: American Wood Preservers Association.

The control of moisture in wood is of utmost importance. Moisture getting into the wood cells expands them, causing the lumber to swell. If no control is used and the wood dries out fast, the outer surface shrinks more than the inner cells, and cracks develop, grain raises, one surface dries ahead of the other and warping results. When cracks develop they provide just the place for those fungi to start feeding, as they hold the needed moisture longer, giving more time for rot to develop.

Warping, cracking and swelling give the builder and the architect many headaches as well as much added cost. Stabilizing lumber by using a good water repellent together with the preservative permits the contractor or home owner to protect the property against rot and insect attack by priming as the job progresses. It also re-

moves the need for a paint primer as the preservative gives all the protection a primer does plus the added value of being able to paint over the primer sooner because the water repellent, having kept the water out of the lumber, makes the surface dry sooner. It also allows building during cold weather and, using the preservative with water-repellent during construction as a primer, there is no need to paint until the weather becomes favorable. Unfinished furniture, if treated at the factory, would arrive with smoother grain, fewer handling stains and in better condition, because any wood will pick up some moisture while in transit.

Contractors find that plywood forms that have been treated with a water-repellent preservative leave a smoother wall, strip off with less concrete sticking to the lumber, require fewer replacements as the plywood gives longer service. Staging planks that are treated do not get used up for ordinary work, as the copper naphthenate leaves a green color that identifies them as staging planks and protects the lives of those who use them by keeping out rot. The water-repellent feature doesn't allow moisture to get in to cause added weight.

Maple!

The carpenter finds that refitting and replacements are reduced by using the proper preservative. When he fits a door that came to him with a water-repellent on it he cuts off the ends, planes in the edges to fit the opening. This removes the treatment and opens up the wood so that moisture gets in, causing the door to swell or warp. It is many times more expensive for him to go back to refit the door than it is to protect it with a good water-repellent preservative.

An architect is constantly searching for materials that will give the home owner more comfort, better service and greater pride of possession. He is equally interested in assuring the contractor that the materials he recommends will give the service that area requires. It is important to him that the articles he recommends can be depended upon to do the job required and at a cost the home owner or contractor can afford. He likes to know when he specifies a preservative for back painting that the cost will not be too high, and that the preservative will not damage the finish by staining or blooming, that it will prevent the growth of a fungi as well as prevent warping. He likes to know that plywood paneling or ranch type finishes can be stabilized and that moisture can be kept from blistering the finished paint. He likes to know these things, for he is responsible for them to the owner and the builder.

The well made preservative then should have an effective water repellent, a really good preservative blended in an oil solution with penetrating agents to give deep penetration, one that does not stain lumber that is to be

left natural or varnished, one that does not stain the clothing if contacted after reasonable time for drying, one that is non-irritating to the skin after application, and finally, one that gives lasting protection.

Cuprinol copper naphthenate and Cuprinol zinc naphthenate meet these requirements. Cuprinol, one of the oldest copper naphthenate formulas for the protection of timber, was developed in Denmark 40 years ago to protect boat hulls, fish nets and ropes. It has been successfully used for many years in boat construction to prevent dry rot and teredo (ship worm) as well as an anti-fouling application. In more recent years it has been accepted in the building trades as a protective treatment against rot and termites, as well as an effective water-repellent.

These preservatives are made in a complete solution of copper or zinc salts, naphthenic acid and the water-repellent together with the other formula thinned with mineral spirits to the correct percentage of materials needed to produce best results. When applied with brush, spray or dip Cuprinol puts this protective solution into the wood, (not just a surface treatment). After the mineral spirits have dried out you have a complete preservative and water-repellent that stabilizes the lumber by controlling moisture movement as well as giving top protection against fungi and boring insects.

Protection against fungi is obtained by rendering the wood inedible. The copper or zinc, with the naphthenic acid, prevents the fungi from digesting the starches, sugars and cellulose. With food gone the fungi die.

The boring insects are stopped in the same manner, they cannot eat the treated wood; therefore they seek new fields to conquer or die along the way.

The stabilizing of lumber has met with acclaim wherever lumbermen, contractors or architects attempt to give the best available. The problem of sticking doors, warped boards, refitting sash, hatchways and veranda frames can be kept to a minimum with the proper use of the right preservative.

The End

READER SERVICE
For locating equipment, supplies or machinery, write our Market Service. We are glad to help you.

This article is another in our series on wood preservation and treatment. It has been written for us by the Cuprinol Division — Darworth, Inc., Simsbury, Conn. Further information about their preservative can be obtained by writing directly to them.

CONSTRUCTION STATISTICS

Construction contract awards in the 37 states east of the Rockies in November totaled $1,087,062,000, or 4% less than the October figure of $1,135,815,000, but 14% more than the total for November 1949, it was reported by F. W. Dodge Corporation, construction news and marketing specialists.

The eleven-month 1950 total of $13,332,623,000 was 41% higher than the corresponding total for 1949, according to the Dodge firm.

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Here's a quality electric sander at a price that means real value. Compare the Model 200 Electric Sander with any other production line sander on the market . . . compare and you'll buy the Model 200.

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- 100% ball bearing construction . . . sealed and shielded . . . no lubrication or filtering of dust required.
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- 33 sq. in. oil resistant rubber pad (4½" x 7½") takes half a standard abrasive sheet. Can be used for either dry or wet finishing.
- Weight 9 pounds . . . for easy non-tiring use.

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Compare this warranty full year unconditional guarantee against any defective material or workmanship.

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PSYCHOLOGICAL FACTORS IN *Accident Prevention*

By Bernard T. Parker

ARTICLES on accident prevention research offer a good deal of evidence in support of statements that a few individuals have a high proportion of the accidents and that this group has more accidents than can be accounted for just by chance. It's also been shown that the more accidents a given individual has had during a previous period the greater his probability of repeating during the next period. Such employees are often referred to as "accident prone" employees or accident repeaters. In the last few years we've established these facts in our own company and we've been working with a group of employees we've identified as accident repeaters.

The greatest improvements in safety have been obtained so far by concentrating on improving equipment and working environment. Some of the things contributing to this improvement include machine guards, better lighting, better housekeeping, traffic aisles, safety eyewear, safety shoes, to mention but a few. The personal approach has taken the form of developing safety consciousness in our employees by posters and contests, safety conferences and personal safety talks on the job.

Those approaches have paid big dividends in all industries using them. If you look into the records for various industries, it's easy to see the significant progress that's been made. But you'll also note that in many there's been no appreciable change in frequency for over ten years.

Change Approach

So the question arises—are we at the end of the line or can we reduce the gap further? We're right at the point now when we've got to add new techniques to the old if we expect to make progress. We have to change our approach.

This is how we changed our approach. First we identified the jobs where injuries most frequently occurred. Then we broke down the figures to see what injuries were being experienced, how they were caused and what part of the body was involved. Our Accident Prevention Department made studies of the jobs to see how the methods could be changed, and, as a result design changes have been made and many workers have been re-instructed on safer methods.

Secondly, we've concentrated on the individuals on these jobs who have repeatedly encountered injuries. Besides group safety training and individual contacts which have helped, we've used this group for experiments in testing. We've been attempting to determine what tests, if any, can predict whether or not an individual is an accident repeater type. We have conducted or are conducting experiments

with intelligence tests, vision tests, tests of hand and eye coordination and perception and some specially developed "accident proneness" tests. We expect shortly to try out some physical fitness tests too.

Now by training our employment interviewers and medical department to recognize these jobs and the safety problem we have with them, we've been hand-picking applicants for them. Our interviewers have been placing elsewhere those whose applications and manner indicate instability. We are convinced that well trained interviewers can do it. Our medical department has been spotting those who perspire excessively, have bitten off finger nails or other indications of poor adjustment. Those people are being placed, but in jobs we know are less hazardous. We are attempting to instruct them even more carefully and make more frequent follow-ups.

In our testing procedure we have evidence that very low scores on intelligence are related to injuries in our plant. Evidence from our own plant shows how inadequate vision is related to high frequency of injuries. There are now close to a thousand companies which have thrown out their wall charts for testing applicants and employees vision and have adopted precise vision testing instruments. The results obtained in the first few studies have now been verified again and again and more evidence is steadily coming in from all types of plants all over the country.

When we find by testing that an employee's or applicant's vision is not up to standard, he is sent out for a complete eye examination. In about 9 out of 10 cases his vision can be corrected.

The results of applying these tech-

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"Durham's Rock-Hard Water Putty covers up Nature's mistakes as well as our own. It handles beautifully — finishes smooth as velvet."

Durham's Water Putty has great strength and adhesion. This modern plastic fills knotholes or cracks, replaces chips, fills and smooths off edges of plywood, etc. *Absolutely does not shrink.* Comes in 25, 50 and 100-pound drums in powder form—keeps indefinitely. Mix with water as needed. Send now for free sample and prices.

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Send request on your letterhead for liberal sample free. No obligation.

THE MODERN PLASTIC REPAIR-MATERIAL IN POWDER FORM

niques to our hiring, placement and rehabilitation program have paid off well. From 1944 through 1947 we reduced our direct compensation costs by an average of 23% compared with the previous four year period. In 1948 our direct compensation costs including money being held in reserve to cover cases still not closed, were lower than they had ever been since we first started keeping records in 1935. Frequency and severity are lower than they've been before.

We therefore are convinced that it is still possible to reduce costs, frequency and severity in the narrow zone that still remains provided (1) that present methods be kept in effect (2) more effort is put forth and (3) that the newer techniques I've described briefly and others like them be added to those already in use.

The End.

Mr. Parker is director of Personnel Research, Bausch & Lomb Optical Co., Rochester, N. Y.

SAFETY TALKS FOR FOREMEN

Entitled "Five-Minute Safety Talks for Foremen," this booklet covers general and specific behaviour and working techniques in many industrial fields. In 52 talks, 112 pages, answers are provided for all a foreman's needs on safety meetings. The booklet covers every phase of industrial accident prevention.

Copies may be secured from the National Safety Council, 425 N. Michigan Ave., Chicago.

EKSTROM, CARLSON GETS SAFETY AWARD

Ekstrom, Carlson & Co. of Rockford, Illinois, manufacturer of woodworking machinery and tools, has been awarded an outstanding safety record certificate by the American Liability Insurance Co. The presentation took place on November 22, 1950, before their as-

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I've helped a host of ambitious men to attain top positions in the furniture and woodworking industry. I'll help you if you'll just give me the chance. My 81-Lesson Home Study Course or my Resident Course at Grand Rapids is highly personal and teaches you the arts of Sketching — Drafting — Rod Making — Time Study — Cost and Production Scheduling. Free G.I. instruction. Money back trial offer to non-veterans. Get the complete facts — then judge!

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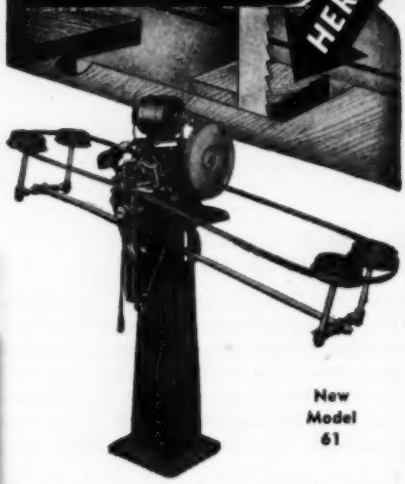

New Model 61

Only the best SAW SHARPENING can give you top-speed production. The Foley Saw Filer quickly puts old saws with dull and irregular teeth back in perfect condition—and keeps them perfect! 25% to 40% increase in production is frequently realized with Foley-filed saws.

ONE machine files cross-cut circular saws, band saws, hand saws.

30 DAY TRIAL OFFER

permits you to use a Foley Saw Filer in your own shop. You can't lose on this offer—write or send coupon.

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sembled employees in recognition of their efforts in successfully preventing lost-time accidents during the long period of thirteen continuous months.

Shown (left to right) are E. W. Boden, factory superintendent; H. E. Nelson, president and treasurer; R. L. Olson, vice-president and works manager; and J. J. Chervenak and L. M. Baker, representatives of the American Liability Insurance Company, which made the award.

EYE PROTECTION TAUGHT BY FILM

A safety training film which should convince the most skeptical workman that it's smart to wear safety glasses is available from the National Safety Council.

Titled "Easy on the Eyes," the film opens on an emotional appeal for workers to realize what their eyes mean to them, then shows how easily eyesight may be lost and that such loss is personal. The film shows what glasses are best for specific jobs, presents case histories of injured workers and the dramatic testimony of blind persons.

Three rules set the theme of the film—wear the right safety glasses, make sure they fit, and keep them clean.

"Easy on the Eyes" is available from the National Safety Council in the usual

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DUST CONTROL SYSTEM

Uncontrolled dust in your plant may mean the difference between substantial profits and losses. Your production is always higher when working conditions are better. If your present dust collecting system is obsolete, if you are considering additions, or if you need a completely new dust control system, consult us. Young & Bertke engineers are specialists in the design and installation of efficient, low cost, dust control systems. We will be glad to talk to you. There is no obligation.

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35 mm sound slidefilm, but it also is offered in a new form for 16 mm sound-motion projectors. The new technique which combines motion pictures, still photographs and unusual optical effects, makes possible a film which approaches the motion picture in effectiveness at about one-third the cost.

Prices for outright purchase, preview or rental may be obtained on request to the National Safety Council, Dept. WD, 20 North Wacker Drive, Chicago, Ill.

J. G. BUCUSS HEADS MATERIALS HANDLING INSTITUTE

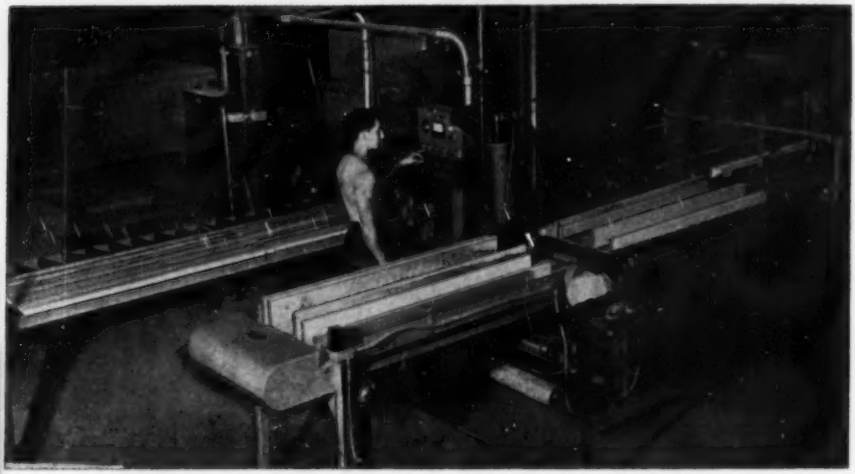
Mr. John G. Bucuss, General Manager, Strapping Division, Acme Steel Company was elected President of the Materials Handling Institute for 1951 at their annual meeting in New York City.

A member of the Institute since 1946, Mr. Bucuss served successive terms as director, second vice president and first vice president the last three years. He has been associated with Acme Steel Company for 32 years.

STOCK PANEL BONDING OPERATION

Bonding of stock panels has now been made completely automatic. Once the integrated equipment is started up, the operator's only duty is to load the feed belt and remove the finished panels.

The other units of the equipment were all designed and manufactured by the Rway Engineers. The equipment includes the glue spreader, the lay-up



Developed by Rway Consulting Engineers for the Rway Furniture Company, Sheboygan, Wis., the new manpower-and-cost saving operation has proved markedly successful.

High frequency energy, supplied by a Thermex Model 10H generator, is employed to evenly and rapidly cure the glue lines.

machine that eliminates manual handling of the boards, and the press. Time cycles range up to 40 seconds, depending on the stock. Panels can be bonded in multiple lengths or widths or both. The output rate is up to 10,000 square feet of stock in a two shift, 18-hour day.

CONTROLLED HUMIDITY IS IMPORTANT

High humidity slows down manufacturing operations.

Moisture contaminates everything it touches, spoiling or damaging items in process of manufacture or in storage.

Controlled humidity is the factor on which many chemical processes, machine functions, and other industrial operations, depend.

Controlled humidity retards deterioration, in storage, of practically all products and materials.

Controlled humidity promotes healthful working conditions, and as a result, greater efficiency.

High humidity corrodes and rusts highly polished metal parts, instruments, tools, dies and machine parts. It impairs strength and changes dimensions of wood products, kiln dried lumber and millwork.

Too much moisture causes furniture to swell and warp in storage. With controlled humidity basement storage space is usable.

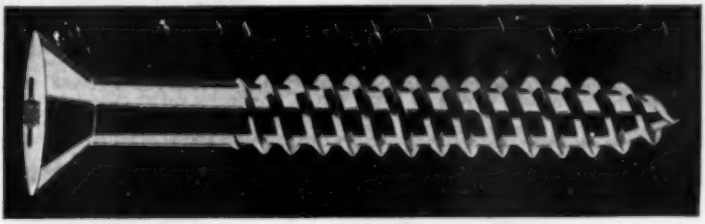
He who works in a rut will always be narrow.— **Crosby Clipper**

HOLTITE

TWIN*fast* WOOD SCREWS

Reg. U.S. Pat. Off.

TWIN THREAD SCREWS for QUICK STARTING - FASTER DRIVING STRONGER FASTENING - DRIVE ON ANGLE WITHOUT CRAWLING



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1

TWIN, PARALLEL THREADS provide twice the thread pitch of ordinary screws. Driving time and costs are cut in half!

2

CYLINDRICAL CONSTRUCTION (not tapered) increases thread area for tighter seating, greater holding power. Often fewer, shorter screws may be used.

3

RELIEVED SHANK DIAMETER prevents stresses which might cause immediate or eventual splitting or fissures.

4

SINGLE, SHARP, CENTERED POINT where twin threads terminate assures quick starting, self-centering, balanced driving. No eccentric "crawling" — no misalignment!

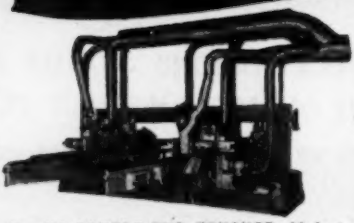
HIGHER PRODUCTION at LESS COST

HOLTITE — TWIN*fast* wood screws are manufactured in all standard head styles and sizes, with Phillips or slotted heads. Materials: Steel, Brass, Bronze, Silicon Bronze, Aluminum, Stainless, with our transparent "lubricized" coating, if requested. Cost of TWIN*fast* is same as standard HOLTITE-Phillips or standard slotted head wood screws.

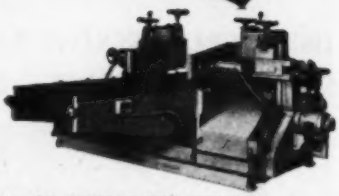
CONTINENTAL SCREW COMPANY

New Bedford, Massachusetts, U.S.A.

You Get Time and Motion Efficiency with —

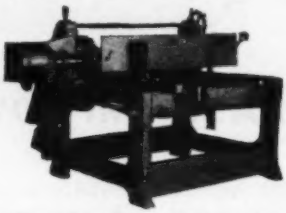


No. 400 DOUBLE-END TENONER. Made to fit your requirements in sizes up to 20'. Will square-cut up to 96" ahead of trim saws. Many accessories to increase usefulness. **Ask for bulletin No. 400.**

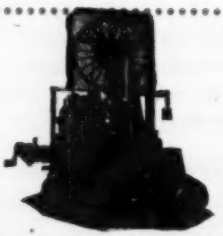


No. 300 DOUBLE CUT-OFF SAW. Accurate production at high rates of speed. Labor saving attachments such as cope motors, dado arbors and other devices are available for specific needs. **Ask for bulletin No. 300.**

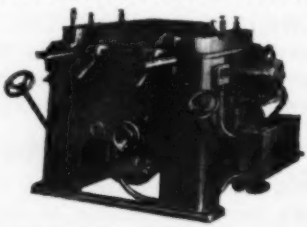
No. 442MT COMBINATION SAW. Versatile machine for ripping, cross cutting, grooving, dadoing, beveling, mitering. Cuts up to 48" wide and rips up to 50" wide. Easily handles large stock. **Ask for bulletin No. 442MT.**



No. 435-H MULTIPLE CUT-OFF SAW. Cuts long boards into short pieces . . . will square up any size sheet . . . and will cut any number of grooves. It's an excellent plywood sizer. **Ask for bulletin No. 435-H.**

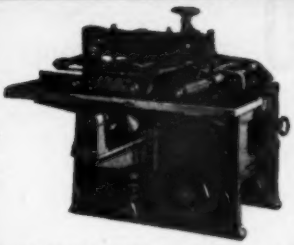


VERTICAL BAND RESAW. Eight feed rolls eliminate "stock wobble". Sizes 48" to 60". Variable feed drive; 100% ball and roller bearings. 54" Twin Band Resaw Combination band rip and resaw. **Ask for the Resaw bulletin.**

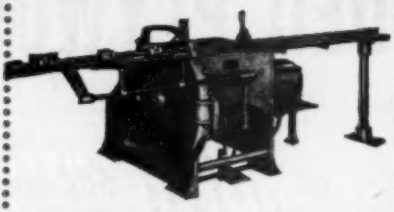


No. 326 MATCHER-JOINTER. For sash and door, furniture and box factories—as well as many special uses. Adaptable for jointing hogshead staves. Unequalled for "T" and "G" work. **Ask for bulletin No. 326.**

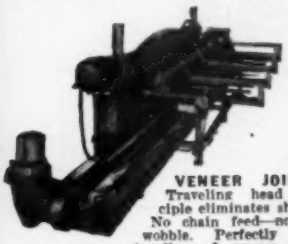
Morgen-Johnson MACHINES



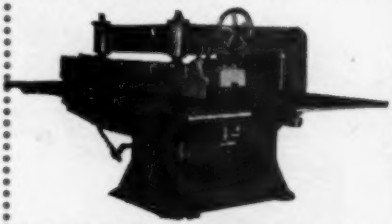
No. 441 GANG RIP SAW. For fast production on the most difficult gang ripping jobs. Six power driven feed rolls . . . 12" or 19" saw space . . . up to 125 HP . . . variable feed drive up to 300 ft. per minute. **Ask for bulletin No. 441.**



No. 477 CUT-OFF SAW. Capacity equals two or three swing, straight line or roller carriage cut-off saws—depending on the type and condition of the stock. Excellent for box work. **Ask for bulletin No. 477.**



VENEER JOINTER. Traveling head principle eliminates shifting. No chain feed—no stock wobble. Perfectly joints bundles of veneer up to four inches thick. Sizes from 90" to 212". **Ask for the Jointer Bulletin.**



VENEER SPLICER. Makes precision tapeless joints. Adjusts itself automatically for varying thicknesses of veneer normally encountered. Welded steel frame with 49" throat clearance at right. **Ask for bulletin No. 50.**

The experience—the equipment—the manpower for producing *Precision Machines.*

Morgen-Johnson MACHINE COMPANY

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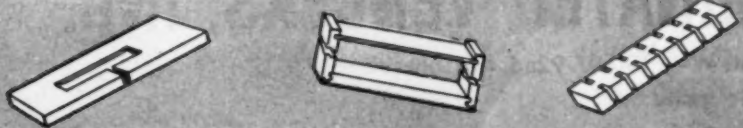

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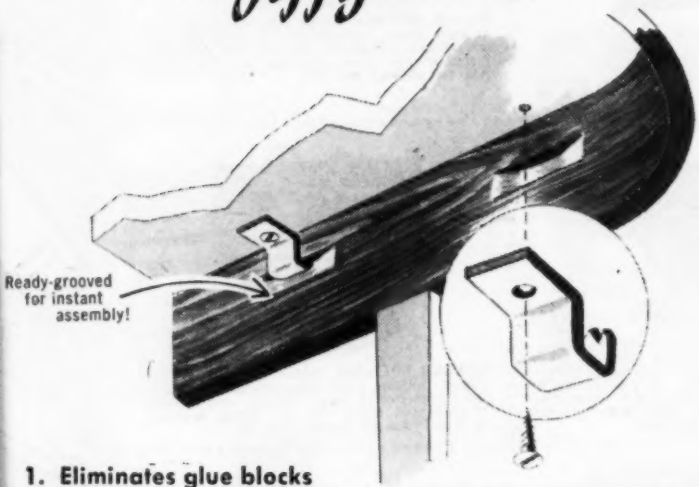

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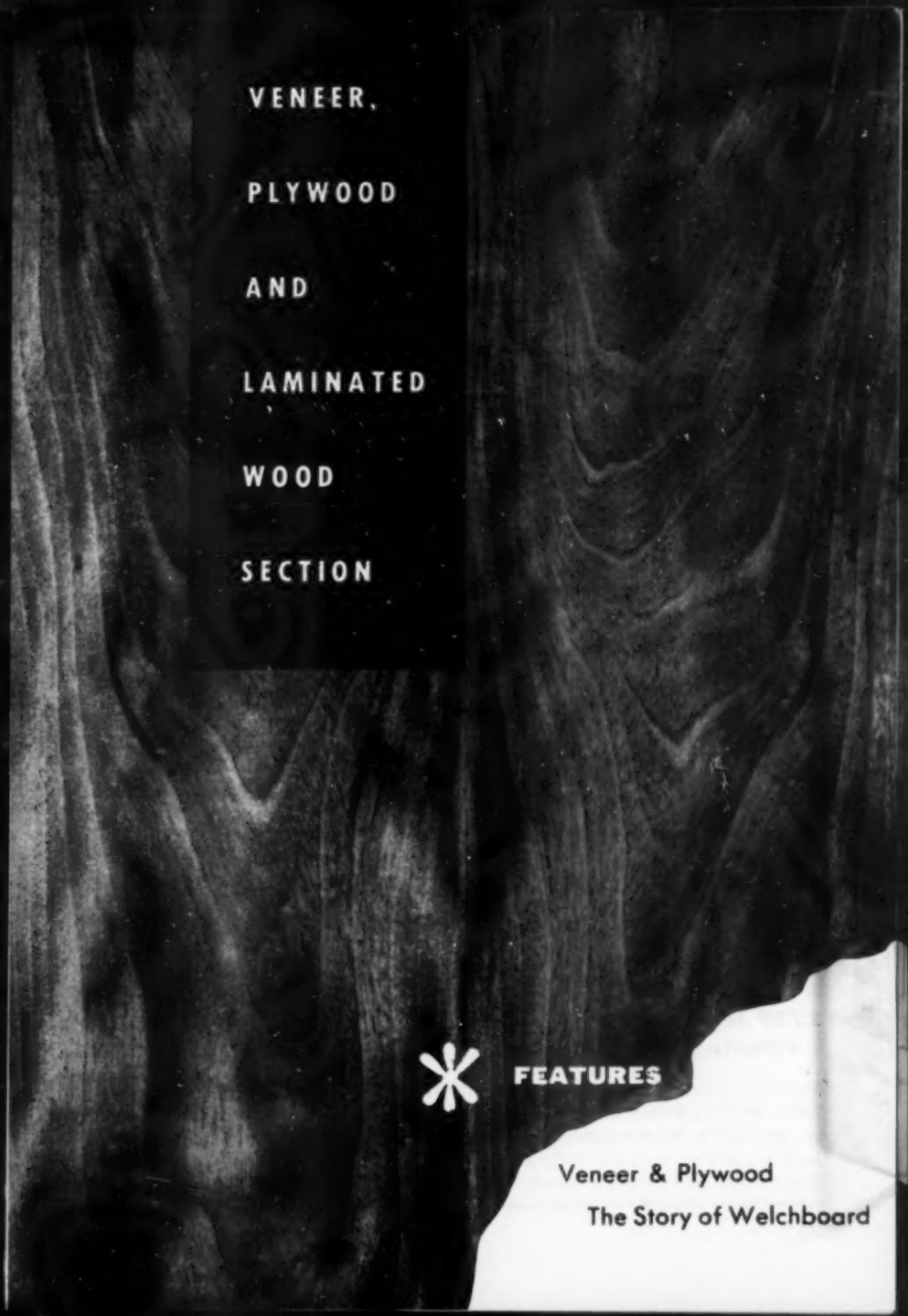
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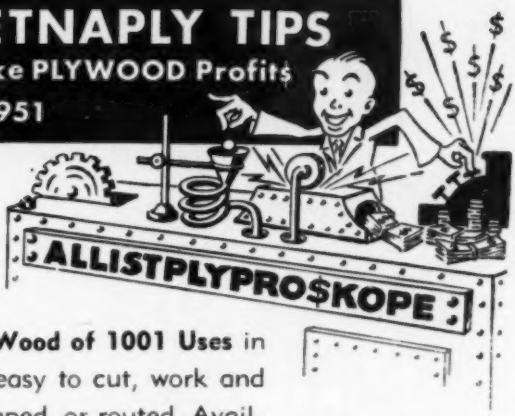

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Veneer and PLYWOOD

By Ned Bailey

Part VI

THE ART of veneering is about as old as civilization itself, antedating the birth of Christ by more than 1500 years. Beautifully veneered pieces of plywood furniture found in the tombs of the Pharaohs of Egypt testify to this fact. The knowledge of the art of making veneer and plywood evidently spread to Assyria, Babylonia and the Roman Empire. Naturally the craftsmen of these countries were greatly influenced by the Egyptian artisans, although they did make several significant advances of their own in the use of veneers. Among these advances, the Romans are credited with the development of the art of matching figured veneers to produce unusual effects with beautiful patterns. They are also credited with bringing into use stumpwood veneer of certain specie, demonstrating by their remarkable veneering work that they must have had expert cutting and gluing techniques.

Pliny tells us that among the many personal treasures of one, Julius Caesar, was a very specially veneered table which he prized above all else. I have wondered whether this veneer was the "cone-cut" as we know it today. Cone-cutting produces circular sheets of veneer by taper-peeling a bolt in a manner not unlike sharpening a wooden pencil on an old fashioned pencil sharpener. The angle of the contact of the knife determined several things, including the degree of taper, the approximate width of the sheet from a bolt of a given diameter, and finally the number of revolutions the bolt must make to produce a completely circular sheet. Such veneers, because of the way they are cut, are short-grained and brittle. A core (or bolt) produces only a small amount of usable veneer. However, the beautiful "wheel" figures that result from this method of cutting are well worth the effort and are particularly effective veneers for circular table top panels.

At first it was only in an effort to reduce the waste involved in saw cutting veneers that the slicing machine had its greatest value. Then, after numerous improvements had been made on the original slicer, it was found that the up-to-date slicer not only saved material, but it produced a very su-

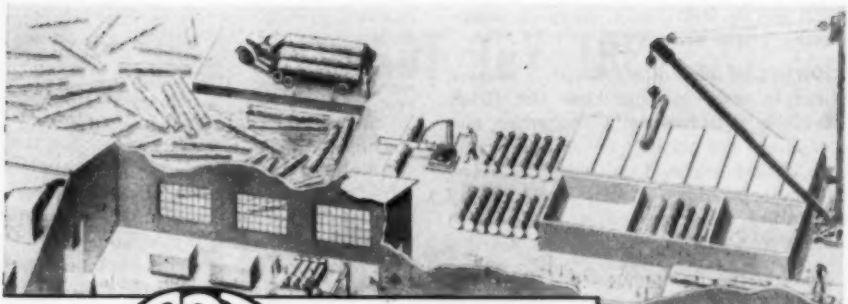
perior veneer. Many of the finer figured woods for face veneers are cut on slicers.

Several advantages are found in slicing face veneers rather than cutting them on the rotary lathe. Logs of smaller diameter can be sliced satisfactorily and the angle of cut may be varied with regard to the veneer grain, so as to bring out the most attractive figure. These sliced veneers can then be effectively matched to give similar or contrasting effects when made into plywood. As contrasted with rotary cut veneer, sliced veneer has the advantage of being cut flat and it has no tendency to curl back in drying which unpleasant peculiarity is found in rotary cut veneers. Furthermore, there is little if any rupture of the fiber since the slight bending of the wet veneer when leaving the knife produces no permanent distortion. This is important with face veneers because adjacent sheets, being quite similar in figure, produce very pleasing results by turning neighboring sheets to show off the figure.

Logs used for slicing are usually opened up on a large band mill to decide the character of the figure. Here again a competent man is needed for a lot depends on his decision as to whether the best veneer will come from rectangular pieces that will give plain-cut veneers or from radial segments of the log. Should he decide that radial slicing is desired, the half log is further reduced to six or eight flitches for the production of quartered veneers. These are procured when the slicing is parallel to the wood rays and at right angles to the growth rings. On the other hand, should the inspector decide that the most satisfacory results will come from rectangular pieces from which flat veneers are cut, then no further flitching is required, generally speaking. Flat-cut veneers are made by slicing half sections of logs, often producing both quarter-grained and flat-grained figures from the same log. Before the actual slicing operation begins, however, it is necessary to soften the stock by either steaming or boiling in a manner similar to the treatment of logs for rotary cutting.

The accuracy and precision of the modern slicing machine makes it possible to slice veneer as thin as 1/110 of an inch. Thicknesses, however, usually range from 1/20 to 1/40 of an inch, the bulk of face veneers cutting at from 1/20 to 1/28 of an inch. Fine cigars sometimes find themselves wrapped in sheets of Spanish cedar only 1/1000 of an inch thick. Sliced veneer does not go over 1/8 of an inch in thickness. Flitches for slicing are usually 12 to 16 feet long, occasionally 18 feet. These long lengths make possible cutting longer veneers than can be cut on the average rotary lathe.

The most commonly used slicer is of the vertical type. The flitch is firmly "dogged" to a heavy metal bedplate which is fastened to two angling slides set in a heavy metal frame. The flitch is driven down against a pressure-bar and knife and the sheet that is thus cut passes out through a slot in the knife carriage like it does on a rotary lathe. While the flitch is being moved up again, the knife carriage moves forward and is in a position to slice off another sheet with the next cutting stroke. As the flitch advances toward the knife, it is given a slight lateral movement by the action of the angling slides. The action produces smoother veneers because the cutting action is slightly along the grain of the wood rather than directly across the fibers. This shearing action is very helpful in producing smooth veneer surfaces at all times and is of particular value



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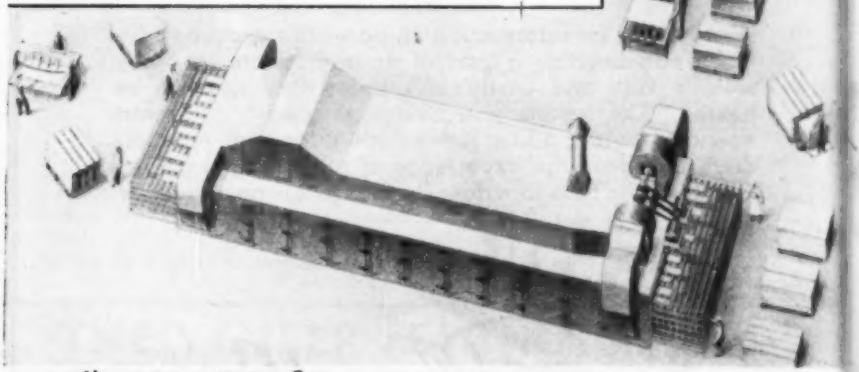
The elimination of bottlenecks in your production line is essential for efficient production.

For the biggest part of a century, Coe has continually developed new equipment and studied overall production problems for various types of veneer plants.

Coe engineers welcome the opportunity of discussing any problems whether large or small pertaining to the production of veneer.



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when woods with curly, wavy or interlocking grain are sliced.

Horizontal slicers work on a similar principle only in this case the flitch travels in a horizontal plane when approaching the knife. Several special-type slicers are available for producing battery separators, shooks for fruit and vegetables, cheese boxes, crates and similar containers.

So that the last surface cut is always on top of the pile, it is the practice of the men removing the veneer from the slicer to turn each sheet over as they lay it in a pile. By doing this, all sheets of veneer are left in sequence, just as they are cut, and this rotation is carefully preserved throughout the drying operation. To sample each flitch, a sheet of veneer is removed from near the bottom, about the center and near the top. These three samples are bound together and marked with the flitch number, the samples (1—top, 2—center, 3—bottom) and the number of square feet in the flitch. Flitches from the same log are usually lettered "A, B, C, D," etc.

The side of a sliced veneer next to the knife, as in rotary-cut veneer, contains numerous fine checks. Whenever possible therefore, care must be taken to spread glue on the open face. In matched veneers this is not always possible because in order to produce a balanced figure, some pieces must be glued open face up.

Although little veneer is now produced by sawing, this method does have its place. Certain woods are not suitable for slicing, such as knotty eastern red cedar, ebony, some oaks and satinwood. Sawing is, to a large extent, restricted to cabinet woods like those just mentioned because they are either highly refractory or they cannot be softened

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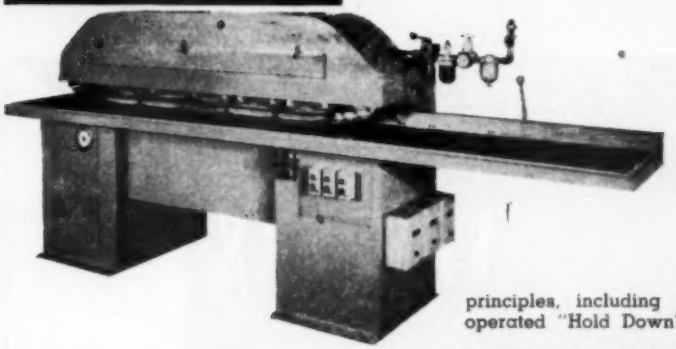
WHY NOT TRY THE NEW CONTINUOUS FEED VENEER JOINTER



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in cooking vats without impairing their color. Since hot tannin extracts coming in contact with a knife, impart objectionable iron stains to wood, those woods with any appreciable amount of tannin are usually sawed. Other woods that are commonly sawed are basswood and Port Orford cedar when they are made into slats for venetian blinds and Spanish cedar shook for the manufacture of cigar boxes.

The veneer saw of today is known as the segment saw. The saw is made up of several thin steel saw segments bolted along the periphery of a heavy metal tapering flange, mounted on an arbor.

By designing the segment saw this way, the kerf is considerably less than that of a conventional circular saw blade of similar size. Notwithstanding this fact, sawing with a segment saw is still costly, particularly in making thin veneer. Half of a flitch is usually reduced to sawdust in, for example, the production of 1/20 of an inch veneer.

(More about cutting veneer next month.)

BUILDING ESTIMATES FOR 1951

Building and engineering contracts will decline 19 per cent in 1951 relative to 1950 in the 37 states east of the Rockies, it is estimated in the annual November outlook of F. W. Dodge Corporation, construction news and marketing specialists.

The estimates are authored by Thomas S. Holden, president of F. W. Dodge, and by Clyde Shute, assistant vice president in charge of the statistical and research division.

"This is a cut-back from the peak construction volume of all time," they state. "It leaves a dollar total measurably greater than that of any year except 1950, and a physical volume total that would compare favorably with other prosperous construction years.

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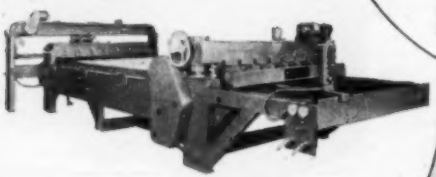

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"We question whether there will be much change in the level of construction costs in 1951. Some materials will be tight; others which were tight in 1950 will be plentiful and competitively priced.

"Demand for building labor will ease somewhat with reduced construction volume, though doubtless many men who have been employed in construction in 1950 will shift to defense production."

The authors employed the phrase "Moderate Over-all Decline" as a subtitle in the article, and attribute "the moderate extent of the anticipated decline" to these reasons, summarized: Partial rather than total mobilization, prospectively increased production of materials reduced output of motor vehicles and other consumer durables, ingenuity in conserving and substituting of materials, and the view by "responsible leaders in government that a strong civilian economy with maximum freedoms is just as essential for preparedness as an enlarged military establishment."

Government action in "turning the inflation spigot on and off" is analyzed at length by Messrs. Holden and Shute, and they base their relatively optimistic viewpoint on their expectation that Regulation X of October 27, will prove to be too drastic and will be modified during 1951.

"Government officials announce the intention of cutting 1951 housing production back one third from the total 1950 volume; from approximately 1,300,000 back to 850,000 new non-farm dwelling units." The writers say, "We incline to the opinion that Regulation X is quite severe and that its effect, unless modified, would be to reduce housing volume considerably more than one third.

"In our estimates we have assumed that Regulation X will be moderated some time next year, if such action proves necessary to produce in 1951 approximately two thirds of the 1950 housing volume. It is our view that

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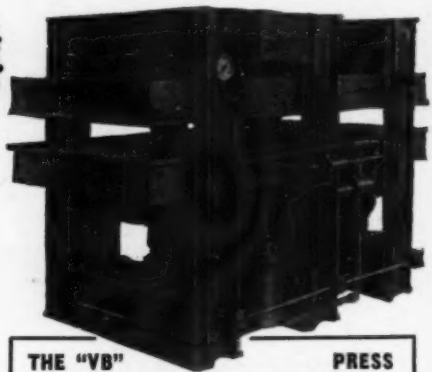

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800,000 to 850,000 new non-farm units would adequately meet 1951 housing requirements.

"Single-family houses built on owners' orders for owners' occupancy are likely to decline less, percentage-wise, than houses built for sale by operative builders."

The article points out that the government's steps to "reinvigorate the waning postwar housing boom in mid-1949," plus further credit easing in the spring of 1950, added to a free-spending mood of the public, combined to bring about a 1950 housing boom that surpassed all records and all expectations.

"In one important sense that status of the construction industry is radically changed," Messrs. Holden and Shute say. "It has suddenly been superseded by the armament industry as the government planners' favorite vehicle for government spending and for stimulating full employment.

"However, the growth momentum and the prospective expansion of the American economy are so great that a continuously large construction demand may be expected without artificial government stimulation."

Control prospects are uncertain, the writers believe.

"The present prospect is," they write, "that controls will be imposed on a more or less experimental basis. Apparently the dominant thought in responsible government circles today is that controls should be kept to a minimum."

The F. W. Dodge estimate is that combined residential and nonresidential contract valuations in the 37 states in 1951 will decline 24 per cent relative to 1949, but that public and private works and utilities, also known as heavy engineering, will remain at the same dollar total, to bring the total of all construction down 19 per cent. The estimate is that nonresidential building will decline 10 per cent, and residential 35 per cent.

All estimates relative to 1950 are

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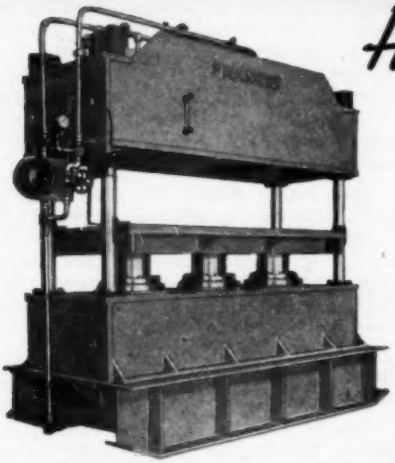

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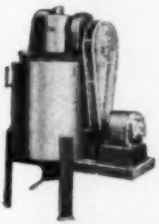

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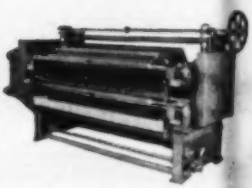

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based on F. W. Dodge nine-month totals of actual contract awards, plus F. W. Dodge estimates for the last three months projected from these actual nine-month totals.

"However," the article concludes, "it must be emphasized that the possibility of sudden, unexpected, drastic action by government greatly augments the customary hazard of guessing future construction activity. More than ever it is necessary for those who make or follow advance construction estimates to review and revise their figures frequently."

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Each leaflet details the uses, cutting and working, conditioning, bending, fastening, joint treatment and finishing of a specific product. Additional points are covered where required. One page is devoted to information about the other Masonite brand products.

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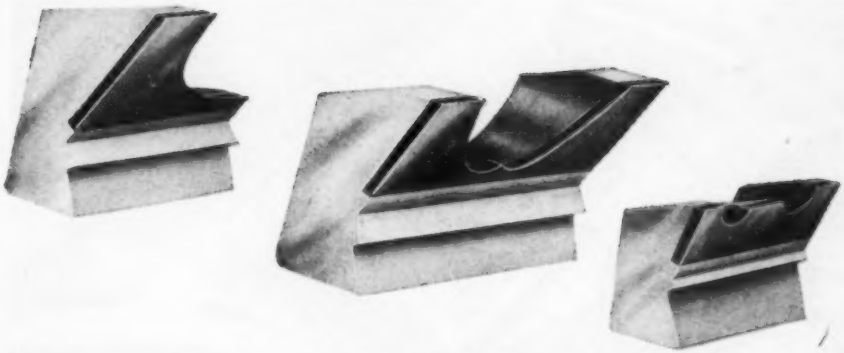

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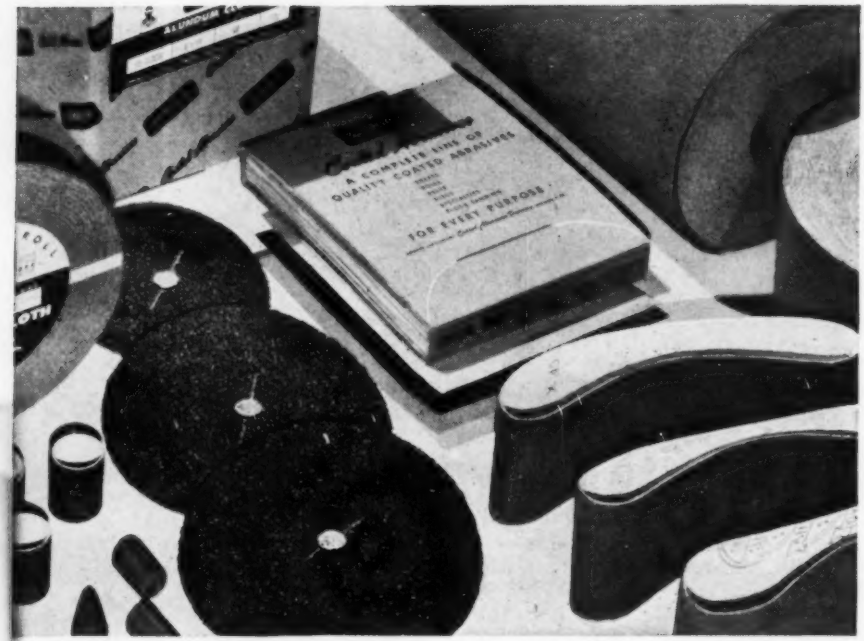

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WELCHBOARD

BY J. H. LEIK

WELCHBOARD—A PLASTIC-FACED exterior type Douglas fir plywood—is now being introduced to several markets by the West Coast Plywood Company of Aberdeen, Wash. Backed by years of research, which in turn were followed by several years of field and laboratory tests, the facing material has proved itself to be tough, durable and smooth under all weather conditions. It is this latter quality of smoothness, without being "slick," which gives it a remarkable compatibility for any type of paint finish.

In Welchboard, the inherent strength, rigidity and durability of exterior Douglas fir plywood is given an additional advantage—a smooth, tough uniform surface of minutely fine, resin-fused real wood fibers. These are inseparably bound together and bonded to the underlying exterior plywood panel by modern hot press techniques, forming a surface, smooth and factory prime-sealed to make it ideal for the finest finishes.

This surface, $\frac{1}{16}$" thick, is light tan—virtually the same as the wood particles from which it is made. It is thoroughly waterproof and weatherproof.

Mr. A. R. Welch, vice-president of the manufacturing firm, invented the panel with the purpose of providing an ideal board for exterior use which combined the strength and rigidity of plywood with the added "plus" of a permanently smooth face. For that reason the panels are faced on one side only, thus effecting a definite economy to users. Welchboard has also been employed most effectively for fine interior walls where a premium grainless panel is desired.

Welchboard produces clean-cut, modern, beautiful interior effects. It builds smart, modern, useful furniture. The floor of this sea-side home is also Welchboard, taking the "beating" of beach traffic.

AMERICAN STREAMLINED COMB GRAINED VENEER

Mfgd. under Process Patent No. 2,261,497, and Lathe Apparatus Patent No. 2,387,116

We are now in production in our new plant, using most modern methods, equipment, and techniques to manufacture door stock in all thicknesses.

HIGHEST QUALITY
OAK, — MAPLE, — POPLAR,
SILVER ELM & WALNUT
SLICED AND ROTARY CUT
VENEER
(In Single Ply Only)

HILL BROTHERS VENEER COMPANY, INC.
EDINBURG, INDIANA

Welchboard panels 12-feet high are battened to break up the large flush surfaces in this Tacoma, Washington, home.

In the latter cases modern one-coat interior paints have proved most satisfactory. The panel meets or surpasses every requirement of commercial standard CS45-48, the measuring stick for all grade marked exterior fir plywood.

With the bulk of field tests having been carried out in the Pacific Northwest it is there that the greatest variety of installations can be seen. Other markets are developing rapidly, however, and may soon outstrip Northwest consumption. In actual use it has received approval for gables, soffits and exterior siding—both in panel and siding widths—for homes, buildings and smaller specialty shops. Having a hard surface it has proven excellent for drainboards, counter-tops and porch decking.

A more recent and spectacular application has been the specification, by a leading naval architect, of Welchboard for cockpit sides and decking on several pleasure cruisers. And it will shortly appear as exterior siding on a number of Army installations in Alaska.

From the standpoint of machining, nailing and joint treatment these panels are treated exactly the same as plywood. They can be worked with hand tools or power equipment. The panels can be easily fastened either with screws or by nailing.

For exterior nailing a galvanized or aluminum nail is recommended. As aid to finishing the manufacturers have added a further extra. Not only is the board grainless and check-free but before shipment each panel receives a pigmented primer coat on both face and back. This means a fine finish can be obtained with only two coats of quality paint.

Welchboard is made in a net ⅜" thickness only and is available in both 48"x96" and 48"x144" panels. It is also shipped in 12" and 16" siding widths. Panels and siding are both protectively bundled at the plant with each bundle containing a sheet of instructions to guide the new user of this "plywood plus."

A luxurious home on wheels. Permanent smoothness for the trailer exterior was provided by applying Welchboard.

Considering its ready acceptance in several markets without benefit of an advertising campaign it can be assumed that Welchboard will have a definite place in building programs of future years. A detailed, illustrated booklet on the board may be obtained free of charge by writing the West Coast Plywood Co., Box 1180, Aberdeen, Washington.

If your efforts are criticized, you must have done something worthwhile.
—Selected.

TANGUILE . . . *for that* "MILLION DOLLAR" LOOK

If you've thought of plywood only as low-cost wall and ceiling paneling for rumpus rooms or attics, consider TANGUILE—the panel of dark red ribbon-striped Philippine mahogany.

For richness . . . for quality . . . for enviable finish . . . TANGUILE is adaptable to the finest residences or offices. Shellacked and waxed, TANGUILE will create new business by the customer satisfaction it gives.

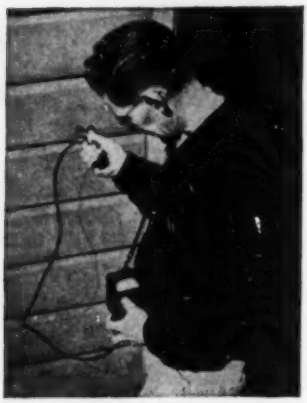
Available in ¼-inch thickness in two panel sizes: 48" x 84" and 48" x 96".

Write for prices.

J. C. DEACON PLYWOOD Company
Established 1890
2627 S. Damen Ave. Chicago 8, Ill.

NEW! TAG Midget Moisture Meter

Checks Lumber, Woodwork—Even Plaster!



Now you can know when to paint: New TAG Midget Moisture Meter shows when wood or plaster is dry enough for peel-proof painting!

Convenient!
Just apply electrodes... press button... read percent moisture direct!

Accurate!
Compensated for battery voltage changes... internal polystyrene insulation!

Inexpensive!
A sturdy, high-quality, low-cost precision instrument!

WESTON ELECTRICAL INSTRUMENT CORPORATION

TAG

Manufacturers of Tagliabue and Weston Instruments

614 Frelinghuysen Avenue, Newark 5, N. J.

INDIANA HARDWOOD ASSOCIATION PLANS MEETING

The Indiana Hardwood Lumbermen's Association will hold its fifty-third annual meeting on Friday, January 26, 1951, at the Hotel Severin in Indianapolis. The directors will hold a meeting in the morning and a program and the election of officers will follow in the afternoon.

President Frederick L. Hovde of Purdue University will deliver the key note address on "Educational Trends and the Lumber Industry."

BINKS OPENS WESTERN PLANT

To better serve the rapidly expanding industrial west, the Binks Mfg. Co. has purchased a substantial new plant, located at 4915 Pacific Boulevard, Los Angeles.

The rapid growth of Binks business in the Los Angeles area over the past 10 years made present quarters inadequate. According to Burke B. Roche, Binks' president, the new quarters were selected with two objectives in mind . . . to provide immediate better

service to Binks customers and to allow for future expansion of plant to keep abreast of industrial growth in the Los Angeles area.

The plant will be operated under the direction of J. E. Roche, manager of the West Coast Division, covering the seven States of California, Oregon, Washington, Arizona, Utah, Nevada, and Idaho. This office will be the focal point for all branch office work involving the warehousing and selling of standard spray finishing and water cooling equipment and the assembly of air compressors.

Spray painting booths and water cooling towers will be assembled here from parts made in Chicago. There will be some sheet metal fabricating. It is expected that manufacturing processes will be expanded in the future.

BIG TECHNICAL PROGRAM SCHEDULED BY A.S.T.E.

The most ambitious technical program in the history of A.S.T.E. national meetings will highlight the 1951 annual meeting of the American Society of Tool Engineers March 15th to 17th, inclusive, in New York City.

Builds PROFITS, not MUSCLES

Quality work *plus speed* cuts time, builds up your profits—on sanding, rubbing, polishing, de-burring. And the NEW Detroit *Easy* Finisher gives you a better job, too! Here's how:

Easy's genuine reciprocating action duplicates expert block sanding—but *five times faster*. *Easy* sands up to moldings, leaves no curlicues, chains or other abrasive patterns. *NO HAND CLEAN-UP!* New positive drive gives full stroke of pad regardless of pressure applied, cuts faster.

Easy's a production machine—not a toy, twice the work area of some sanders. New velvety smooth operation reduces operator fatigue and a world-wide reputation for durability is your assurance of long life and trouble-free performance.

Write for catalog sheets today.

DSM DETROIT SURFACING MACHINE COMPANY

1278 E. EIGHT MILE RD. • DETROIT 20, MICH.

Some 30 technical sessions are planned for the three days. Headquarters will be at the Hotel New Yorker.

16,000 EXPECTED TO ATTEND HOME BUILDERS EXPOSITION

An estimated 16,000 home builders, architects and building materials representatives will gather in Chicago on January 21-25 to learn what's ahead for home building in 1951.

The event is the Annual Convention-Exposition of the National Association of Home builders, held at the Stevens and Congress Hotels. Nearly two acres of floor space will be devoted to displays and exhibits of new and established products.

PLANT MAINTENANCE SHOW

The defense crisis is to be considered particularly at the 2nd Plant Maintenance Show to be held in Cleveland, Ohio, January 15-18. Forty-five speak-

12" HEAVY DUTY

Darra-James Tilting Arbor Saw

LOWEST PRICE EVER OFFERED!

WAREHOUSE CLEARANCE

Now, for the first and maybe last time, you can buy a heavy duty 12" saw for less than you pay for smaller, lighter units. Quality made . . . designed for tough service, these saws are a real bargain. Compare them point by point—prove to yourself that this is the best buy you ever saw! Heavy (430 lbs.), massive construction—this is no lightweight—the Darra-James 95C will give years of production service. BRAND NEW...offered on a fully guaranteed basis. These saws formerly sold for $295.00.

OUR PRICE $198.50 F.O.B. Waterbury, Conn.
Less motor, switch, blade, guard and anti-kick back pawls
GUARD, SLITTER AND ANTI-KICK BACK PAWLS $8.50
We can furnish new 2 HP, standard make motors as follows:
Ball-bearing, 1 PH60 Cycle, 110-220 V., 1750 RPM....**$105.50**
Fairbanks-Morse Pancake Motors 3 PH 60 Cycle,
220-440 V., 1750 or 3600 RPM **85.00**
Prices on Belt, Pulley and Blade on request.
(Well rated firms net 10 days — others send check with order.)

FEATURES: • 4" Cut • 42" x 32" Table, including extensions • ¾" Arbor with Heavy Duty New Departure Bearings • Positive Tilt and Elevating Mechanism • Extra deep Mitre Gauge Slots • Self-Indexing Mitre Gauge mounted on extra long precision made guide bar • Cast aluminum self-aligning Rip Fence—won't creep • Standard Motor Bracket mounts any motor in 204 or 224 Frame • Weight 430 lbs. • No die castings used anywhere

ACME EQUIPMENT CO. INC.
126-28 S. CLINTON ST. • CHICAGO 6, ILL.

ers drawn from a cross-section of American industry will address the conference while more than 150 companies will display thousands of new products designed to cut the huge maintenance bill of industry. The costs of maintenance alone are estimated to be in excess of eight and a half billion dollars annually. Both the conference and the show will reflect the growing concern of industrialists with this staggering waste not only in normal production but also in light of the national defense crisis.

In addition to general sessions, separate conference meetings will be devoted to special problems in particular industries. The exhibit area of the show will be 250% greater than the first show. Advance registration cards and further information about the program may be obtained by writing Clapp and Poliak, Inc., 341 Madison Ave., New York City.

Still going strong after 28 years . . . General Manager Charles M. Brink and Moulding Department Foreman Henry Madsden of Pacific Manufacturing Company watch the operator feed a Vonnegut Moulder originally shipped in 1922.

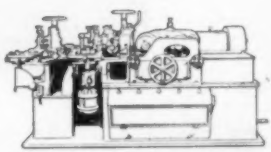
28 Years... Still Going Strong

Moulders, Glue Jointers and Tapeless Splicers . . . these are the Diehl Wood Working Machines you find at Pacific Manufacturing Company, Santa Clara, California—one of the largest detail mills west of the Mississippi.

Behind one of the five six-inch moulders at Pacific Manufacturing is a story. For this machine, bearing Serial No. 85 was shipped to the West Coast in August, 1922—is 28 years old, and still going strong.

You'll find this same kind of long wear-life in the *newest* models of Diehl — Vonnegut Moulders, *plus* refinements which simplify set-up time, make the work go faster. And you'll find long wear-life in other Diehl Wood Working Machines — machines which, like Pacific Manufacturing's Diehl Tapeless Splicers, are still giving trouble-free performance after a decade of service. Complete information about Diehl Machines is yours for the asking.

Write for bulletins today.



Today's Diehl-Vonnegut Six-inch Moulder incorporates the famous vibration—free spindle which helps to assure smooth and true cuts at any speed.

On the Banks of the Wabash

THE G. M. Diehl MACHINE WORKS, INC.

WABASH, INDIANA • U. S. A.

F.P.R.S. Clinic

WHAT IS THE BEST WAY OF BENDING SOLID WOOD TO FORM?

As a special service to our readers, this Forest Products Research Clinic will appear in each issue of WOOD WORKING DIGEST for the next several months. It will cover any subject from logging through finishing in the woodworking industry. Specialists in various fields will answer your problems. If there is some matter you would like to have discussed, please send your problem or question to WOOD WORKING DIGEST, Research Clinic Editor. This month's report has been prepared by E. C. Peck, Technologist, Forest Products Laboratory.

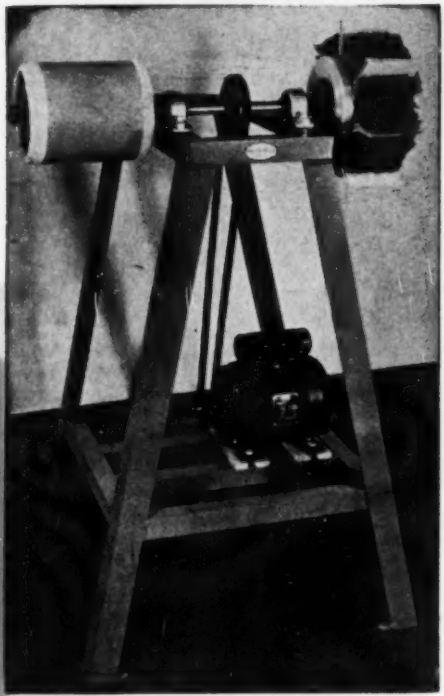
The bending of solid wood to form is an ancient craft, but despite its long practical history there is no method of wood bending that guarantees 100% success. Wood bending consists of a series of steps during any one of which improper procedures can result in failures.

To begin with, it is necessary to understand what happens when a piece of solid wood is bent. The forces at work during bending stretch the outer or convex side of the piece and compress the inner or concave side. Wood bent in its natural state tends to spring back to its original straightness when released due to the action of these forces. Plasticized wood, however, can be deformed more or less permanently; to a large extent in compression but to a slight extent in tension. In bending, the objective is to compress the wood on the inner or concave side and to restrain it from stretching on the outer or convex side. There are techniques and devices available for accomplishing this.

The first step in bending is to select wood of a species that can be bent reasonably well. Softwoods, except for yew and possibly the yellow cedars, have poor bending quality. Hardwoods, such as red oak, white oak, elm, hickory, ash, beech, birch, maple, walnut and sweet gum, are commonly used in the production of bent members.

The next step in bending is to select the proper bending stock, for all pieces of wood cut from logs of a particular species do not possess uniform bending quality. Bending stock, should be straight-grained and free from defects, such as decay, knots, shake, pith and surface checks. The grain should not slope more than about one inch in 15 along the length of the piece. Pieces noticeably brash should not be used.

LOWER YOUR SANDING COSTS



USE A

Sand-Rite "DUO" Sander

Get A-1 finishes on all types of wood products with rounded contour and irregular shape, such as—

- CHAIR ARMS & LEGS
- TABLE LEGS
- GUNSTOCKS
- BRUSH HANDLES
- TOYS
- GOLF CLUBS
- MOLDINGS
- DISPLAY FIXTURES

The Sand-Rite "Duo" Sanders are available in floor models as illustrated or in handy bench models. The "Duo" will save you labor time and abrasive materials and give you finer finishes.

WRITE TODAY FOR INFORMATION

SAND-RITE MFG. CO.

Dept. W

226 W. Schiller St. Chicago 10, Ill.

The next step in bending is to season the stock. Although green wood can be bent, there is a limit to sharpness of the bend that can be made with green wood, because hygrostatic pressure may develop, resulting in failures on the concave face. Although most commercial bends could be made from green stock, seasoned stock is better because its moisture content can be more readily reduced, after bending, to the requirements of the finished product. Pieces bent green will shrink, and may distort, check and split during drying. Wood that is too dry on the other hand, is relatively stiff and will not bend well. Ideally, bending stock should be air seasoned and stored under controlled conditions, to maintain a wood moisture content of 12 to 20%. Bending stock cut to length before seasoning should be end coated in order to reduce end checking and splitting. For furniture parts, bent in machines, a moisture content of 15 to 20% is preferable, and for bending in hotplate press, 12 to 15%.

The next step in bending is to machine the bending stock. A basic principle here is to do as much of the sawing, surfacing and shaping as possible before bending. Stock should be cut as thin as possible with due allowance for deformation and shrinkage. It should be cut accurately to length and should be surfaced to assure uniform thickness and all saw marks, which might induce bending failures removed. It is best to keep the width greater than the thickness, and if possible to cut the stock so that annual rings are flatwise—that is perpendicular to the plane of the bend.

The next step is to plasticize the stock. The best, safest, the most practical way of plasticization is to subject the stock to steam at atmospheric or low pressure to boiling water for the following approximate periods:

For stock at 15-20% moisture content: ½ hour per inch of thickness.

For stock at 12-15 percent or lower: 1 hour per inch of thickness. Although some chemicals cause wood to become highly plastic, better bending results have been obtained with steamed wood, than with chemically treated wood.

The next step is the actual bending operation. There are two types of bending processes, depending upon the degree of curvature. Where the difference of length between the outer and the inner faces of the bent pieces is not greater than about 3%, so called free bending is feasible. This means that the piece is bent without the use of end pressure. Most bends however, cannot be made by the free bending process. The piece must be handled in such a manner that compression is secured and at the same time tensile failures are prevented. The common way of doing this is to use a metal strap, fitted with end blocks or clamps. During bending the metal strap is in contact with the outer or convex face. There are many machines and devices for applying end pressure to the piece during bending. The best type utilizes the principle of the reverse-lever end block, which automatically applies end pressure equal to the force generated within the wood as it is bent.

Most bending failures are caused by poorly designed or worn apparatus or to poor bending technique. Tensile failures are generally associated with lack of sufficient end pressure. Compression failures are generally due to improper plasticization, to defects in the stock (which give localized concentrations of stress) or to excess water (which causes hygrostatic pressure). Pieces that are too narrow for their thickness may buckle laterally. Where end pressure is not applied uniformly to the entire end surface or where the ends of the steamed piece are plasticized to a greater extent than the rest

DEDGIE, the Planer Boss says:—

"Don't forget, your 'books' for the year can be opened by both Uncle Sam and Saint Peter."

Our books show a host of satisfied customers who regularly use

DETROIT KNIVES

PLANER - MOULDER
VENEER - CLIPPER
SHAPER STEEL

Say DETROIT for your next knife order — you'll like their uniform cutting long edge — holding and high production.

Better Knives since 1885

DETROIT EDGE TOOL CO.
3425 WIGHT STREET
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YOU'LL PROFIT 5 WAYS with MOISTURE REGISTER

With Moisture Register instruments you

- **Make sure your lumber meets moisture specifications for grade.**
- **Save freight costs. Don't pay for excess moisture.**
- **Save man hours, Moisture Register tests in seconds. Oven tests take hours.**
- **Save on overhead. Wet lumber increases tool maintenance.**
- **Reduce customer complaints and rejects. Insure consistent production quality.**

With Moisture Register, you know that wood will be exactly right for most efficient bonding, cutting, fitting and finishing.

Model RF4
at Morris Furniture Company

Testing moisture content of panelling with Model RF4 at Morris Furniture Company, Los Angeles, manufacturers of high quality furniture.

Models priced from $75.00 to $148.50 test 80 wood varieties, 0 to 25%, in 3 seconds or less. Rugged, portable. One-year guarantee. Write for complete information.

10-DAY FREE TRIAL on any model! No obligation. Write today, outlining your requirements.

ELECTRONIC MOISTURE REGISTER

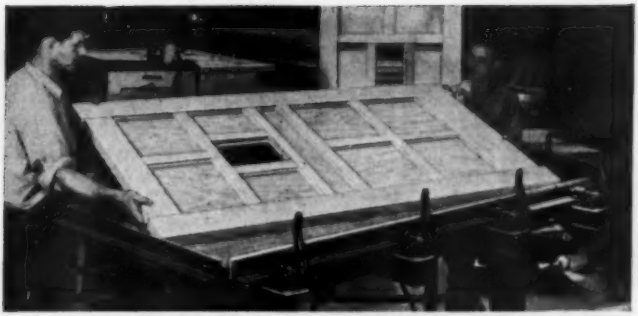
Mfd. by Moisture Register Co.
1510 W. Chestnut St.
Alhambra, Calif.

of the piece, some end mutilation may take place.

Although the color of the surface of the wood may be changed by the steaming or boiling this is not serious. A more serious source of discoloration is the reaction of such extractives as tannic acid and iron. Protecting the stock from drip in iron or steel steaming retorts and preventing contact with iron shelves in the retort, or iron of steel forms or straps, will reduce stain caused by iron and tannic acid. The use of galvanized or nonferrous metals in retorts and bending apparatus will prevent this type of staining. Stained wood can be bleached after the bent piece is fixed and dried. If the tannic acid-iron causes the trouble, a hot 3% solution of oxalic acid will remove the stain.

After the piece has been bent it should be dried and cooled, in order to fix or set the piece in its curved form. Because there is a tendency for a bent piece to straighten out, that piece should be fastened to the form, held between hot plates or platens, or held in shape with tie rods or wood stays till it is cool and dry. There is one set of conditions that is best for drying and fixing all bent stock. The optimum conditions are influenced by the species, moisture content, thickness, and the intended use of stock. Drying rooms with temperatures of 140-160° F., with no supply of vapor to the air are generally satisfactory for the drying and setting of bent members. The time required for fixing the bend appears to be less than that required to dry from the moisture content to the point suitable for use. Therefore, if the bent members are dried to a moisture content suitable for service the bend is certain to be fixed.

(This clinical report is a condensation of a more comprehensive publication entitled "Bending Solid Wood to Form," published as report No. 1764 of the Forest Products Laboratory.)



20 TIMES MORE PRODUCTION with DE-STA-CO TOGGLE CLAMPS!

De-Sta-Co Toggle Clamps speed production for this door manufacturer. Six Model 640 clamps are used in the fixture to obtain quick clamping action and positive holding pressure, evenly distributed. The use of a dielectric bonding device and new-type fast-drying glues speed the drying cycle to such an extent that the fast action of De-Sta-Co Toggle Clamps is required to maintain a high rate of production. Result: 20 high quality exterior doors in five hours; ordinarily, 1 door would be processed in this time.

You can select from 40 models of De-Sta-Co Toggle Clamps for progressive, modern tooling to meet today's competition. Their well-engineered design and rugged construction give you *quick* clamping and *positive* holding pressure. Whatever your work holding problem, there's a De-Sta-Co Toggle Clamp to solve it.

See the complete line of De-Sta-Co Toggle Clamps in our illustrated catalog, No. 49. Write today for *your* copy and the name of the stocking representative in your area.

DETROIT STAMPING COMPANY
312 Midland Ave. • Detroit 3, Michigan

B. M. ROOT ISSUES BULLETIN

We are told that this firm's bulletin No. 165. covering their horizontal multiple spindle boring machines is of special interest to the woodworking industry.

The 16 page bulletin is profusely illustrated and various sections contain detailed information on the construction, operation and application of the machine and its accessories.

A four page section shows a variety of boring spindle combinations and their attachments. Other sections cover construction and working features of the machine and a double page spread carries nomenclature views of the machine from all angles.

The bulletin will be sent free of charge upon receipt of a request, written on the writer's company letterhead, to Dept. WD, B. M. Root Company, York, Pa.

Makes all these cuts and more

PORTER-CABLE Guild **ROUTER is the Busiest Portable Tool in the Shop**

Guild Router has already proved its value in woodworking shops everywhere. Powerful, rugged—the Guild Router has a definite place in production work—and it's made to order for bench work, repairing, pattern making. In pre-fab plants, sash and door mills, use it with hinge butt templet to simplify door hanging. Use it to cut contours and decorative edges on built-in cupboards, cabinets, tables. Works beautifully on all woods including plywood. Features include simple depth adjustment, scientific balance for easy operation.

And what a buy! With its interchangeable motor and attachments, you can convert to a Power Plane for only $25, and to a Bench Shaper for only $24 additional.

Guild Router
Only $49.50

PORTER-CABLE Machine Co. 5021 N. Salina St., Syracuse 8, N. Y.
Manufacturers of *SPEEDMATIC* and *GUILD* Electric Tools
In Canada write: Strongridge Ltd., St. Catharines, Ont.

WOOD Industry Notes

PORTER-CABLE BUYS JOHNSON CORPORATION

De Alton J. Ridings, president of the Porter-Cable Machine Company, Syracuse, New York, has announced that his company has just completed the purchase of the Johnson Engineering and Sales Corporation of Rockford, Illinois. The purpose of the move is to extend Porter-Cable's line of electric tools in order to provide a complete selection of portable woodworking machines.

The Johnson Corporation manufactures air-driven sanding machines used primarily in the furniture and automotive industries.

NEW PRESIDENT OF LUMBER ASSOCIATION

Corydon Wagner, outstanding West Coast lumberman, has been elected President of the National Lumber Manufacturers Association for 1951. H. M. Seaman, Executive Vice President, Kirby Lumber Company, Houston, Texas and retiring President of the Association, has been named Chairman of the Board.

The elections highlighted the 1950 annual meeting, held November 13-16 at the Shamrock Hotel, Houston, Texas.

M.F.M.A. TO MEET

The 54th Annual Meeting of the Maple Flooring Manufacturers Association will be held at the Blackstone Hotel, Chicago, Friday, January 26, 1951. On Thursday, January 25, at the Blackstone, the advertising committee, headed by Mr. C. F. DeWitt, Oconto, Wisconsin, will complete plans for continuing association advertising, trade promotion and public relations activities.

Manufacturers of Northern hardwood flooring from the states of New York, Ohio, Illinois, Michigan and Wisconsin, will be represented at the meeting.

NORTH-CENTRAL REGION OF F.P.R.S. MEETS

This section of the Forest Products Research Society had a very fine meet-

CUT COSTS, make stronger assemblies with QUALITY CONTROLLED "ROCKFORD-PHILLIPS" or SLOTTED HEAD WOOD SCREWS.
Stock of all sizes and head styles ready for shipment.
FOR COMPLETE INFORMATION AND PRICE LISTS WRITE FOR OUR NEW WOOD SCREW Catalogs No. 202 and No. 106.
We fabricate a complete line of STANDARD • AUTOMOTIVE • AIRCRAFT & SPECIAL Threaded Fasteners.
"Quality Controlled" Products
ROCKFORD Screw Products Co.
2501 S. Ninth Street
ROCKFORD, ILLINOIS
Phone: 4-9441 or Wire: RK 88

ing at Rockford, Illinois in November 1950.

The two-day conference had a large attendance. One of the highlights of the conference was the smorgasbord luncheon by the Ekstrom-Carlson Company.

Topics discussed during the regional convention include choice of, care and maintenance of machinery; conserving lumber by removing defects; materials handling; and various aspects of sanding, rubbing and polishing.

SHORT COURSE ON HARDWOOD LUMBER GRADING

A six day short course on the grading of hardwood lumber has been announced by R. K. Newton, Supervisor of Short Course, Division of University Extension, University of Illinois, Urbana. The course will take place February 5-10, inclusive at Robert Allerton Park, Monticello, Illinois, a university property located about 25 miles from the campus.

SOUTHERN SASH & DOOR MEETING

The Southern Sash and Door Jobbers Association at New Orleans was a success in every respect. Ably managed by Clark McDonald the meeting ran smoothly, was chuckfull of information and progress of the type needed by both the sash and door manufacturer and jobber. One of the speeches delivered at this December 7th meeting appears in this issue.

E. W. Ruddick (left), Secretary of the Joint Wood Window Promotion Program, explaining the program to John Kilpatrick, senior Vice President of Southern Sash and Door Jobbers Association, and President of Kilpatrick Brothers, Inc., Oklahoma City, Okla.

Demonstration of Acme strapping equipment at recent meeting of Southern Sash and Door Jobbers Association.

Appointments

George E. French, the founder and treasurer of the Atlantic Lumber Company for many years continues his association as Chairman of the Board and is succeded as Treasurer by his son, **Edward V. French,** who has been active in company affairs for 30 years.

Chester A. Gage, Vice President in Charge of Sales, National Starch Products, Inc., has announced that while he is retiring from active business on January 1, he will remain as Director and Consultant of National Starch Products, Inc.

The appointment of **I. R. Walker** as General Manager of the Saw Division of R. Hoe & Co., Inc., saw manufacturer, has been announced.

C. B. Walworth has become Supervisor of Glues and Industrial Resin Technical Service for Plaskon Division, Libby-Owens-Ford Glass Company. Walworth was formerly working on Plaskon glues and industrial resins in the Research Department. In his new position he will assist Plaskon servicemen and their customers on technical matters.

C. B. Walworth

L. W. Jander

The appointment of **L. W. Jander** to the post of Sales Manager of the Industrial Division of Henry Disston & Sons., Inc., was announced by the Company which manufactures saws, tools, files and special steels. Jander succeeds **J. F. Wilkinson,** who resigned to enter his own business in Miami, Fla.

Supreme BAND SAWS

END YOUR TROUBLES

SUPREME BAND SAWS cut faster . . . have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness . . . to stay sharp! There is a Supreme Band Saw for every industry . . . for every material. Special purpose saws are made to order.

WRITE TODAY FOR YOUR COPY OF THE "SUPREME" CATALOG NO. WWD

THE SAW & KNIFE SPECIALTY CO., INC.

MILWAUKEE WROT WASHERS

SINCE 1887

WASHERS - BLANKS STAMPINGS

Your most dependable source of supply—the world's largest manufacturer of Washers, serving Industry since 1887. Over 22,000 sets of Dies.

Submit your blueprints and quantity requirements for estimates.

WROUGHT WASHER MFG. CO.

The World's Largest Producer of Washers

2261 S. Bay Street Milwaukee 7, Wis.

SAVE SANDING COSTS!

How Production-Wise Manufacturers
Save Time and Money with AP JEWEL ABRASIVES

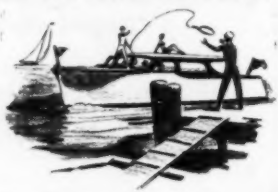
BEATS PAR

This prominent manufacturer of sporting goods had a problem finishing golf clubs. Tricky combination of wood and metal sent finishing costs sky-high. Finally switched to heat-resisting AP Bondite New Process Belts—says they outperform all other abrasives tried.

FINER FINISH

Much of the beauty of maple furniture depends on quality of finish. This manufacturer, dissatisfied with results, found AP Jewel Garnet Endless Belts did faster work than previous abrasives — gave finer finish at same time.

8 TIMES LONGER WEAR



Torn covers on drum sanders were causing costly slowdowns finishing plywood sheets for this boat manufacturer. AP representative recommended change to AP Bondex Garnet Fibre. Manufacturer now reports, "These AP drum covers last 7-8 times as long as former abrasives".

Facts like these from manufacturer after manufacturer tell a story you can't afford to ignore. Find out what Jewel Abrasives can do for you now! See your distributor or write us today.

Abrasive Products, Inc.

SOUTH BRAINTREE 85, MASSACHUSETTS • MAKERS OF JEWEL COATED ABRASIVES

Erle Racey Reports On

American Wood Window Institute's

Specification Committee

In reviewing the activities of the American Wood Window Institute, our first 2-color newspaper ads ran in August, 1949. Since then, 21 newspaper advertisements have appeared, showing a circulation of 17,731,871. More than 250,000 reprints of these 2-color ads have been distributed to architects, contractors, speculative builders, F.H.A. and V.A. officials, retail lumber dealers and others involved in the building trade. Over 51,000 folders have been distributed to consumers.

Luncheon, December 7th, at the Roosevelt Hotel Blue Room, New Orleans, La. Gathering of several hundred members of the Southern Sash and Door Jobbers Association and guests.

The Institute's Specification Committee has developed "Minimum Specifications for Quality Double-hung Wood Window Units," which is sufficiently broad to include the quality units on the market, but maintains standards that prohibit the inferior window.

Double-hung wood window units meeting these specifications can now be manufactured under the American Wood Window Institute Licensing Agreement, which permits their identification with the Institute's Seal of Approval.

Thus, for the first time, quality double-hung window units from many manufacturers can be identified by a quality seal which means something to the consuming public. This agreement is open to any fabricator of quality wood windows whose product meets the minimum specifications whether the manufacturer is a member of the Institute or not.

The seal is about 4" long, ¾" wide and is placed on the underside of the head-jamb in the inside sash run. Each licensee fabricator has his individual number, which appears only on the seals used to identify his product.

Advertising will be run market by market, explaining what the seal means

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Excerpts from a speech delivered by Mr. Racey, Advertising Counselor of the American Wood Window Institute, Inc., at the December meeting of the Southern Sash & Door Jobbers Association at New Orleans.

to the consuming public, thus preselling the units bearing the seal. Fabricators who wish to use these seals must have their units approved by one of the testing laboratories recognized by the Institute.

This program is now getting underway. We feel that this movement will be welcomed by the manufacturers of quality wood windows, the building trade and the consuming public because this program identifies quality wood window units manufactured under minimum specifications and makes these windows easily identifiable to the public, building trades and governmental agencies.

SOUTHEASTERN DRY KILN CLUB

Over sixty dry kiln men and their supervisors met at Lenoir, N. C., December 9, to visit the seasoning yard and kilns at Broyhill's Lenoir Corporation and Kent-Coffey Furniture plants. This group of visitors came from four states to see and discuss better methods of seasoning and kiln drying lumber.

This was the second meeting of the Southeastern Dry Kiln Club organized to promote improved seasoning practices by making it possible for kiln operators to meet, discuss problems and solutions and acquire new and proven ideas which will benefit them and their companies. Membership in the club is open to anyone interested in kiln drying operations and wood moisture control.

FLEXWOOD

Flexwood, a wood veneer 1/85th of an inch thick glued under pressure to cotton backing, is described in a brochure just issued by United States Plywood Corporation. Flexwood, offered in a wide variety of veneers is shown solving many difficult architectural problems. U. S. Plywood Corp., 55 W. 44th, New York City.

MORE SPEED MORE SUPPORT

MORE WORK

IMMEDIATE DELIVERY!

PADDOCK
BALL-BEARING
BAND SAW GUIDES

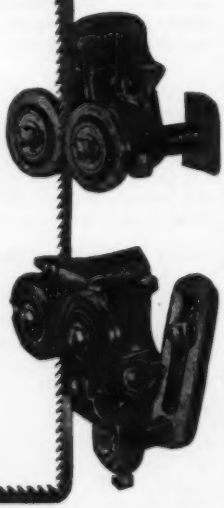
PADDOCK BALL-BEARING BAND SAW GUIDES more than pay for themselves in: (1) Reducing blade breakage; (2) Cutting more materials; (3) Protecting workmen; (4) Speeding up production; (5) Conserving man-power.

Ball-bearing wheels, turning with blade, give strong friction-free support to saw blade. Wheels are interchangeable for years long wear. They're of strong steel construction.

Write today for Free Circulars and Prices

PADDOCK TOOL COMPANY
1418 Walnut St. Kansas City 6, Mo.
Guide Makers Since 1920

Paddock
BALL-BEARING
BAND SAW GUIDES



Top Products in Every Line
Cut Costs and Build Sales
with AMERICAN PHILLIPS SCREWS

HOW THEY CUT COSTS: From vacuum cleaners to vending machines; from trucks to office appliances and suntan lamps . . . manufacturers use American Phillips Screws to speed up production, stop spoilage, and cut unit-costs. For these modern fastenings banish fumbling, crooked driving and scarred surfaces . . . *cut assembly time as much as 50%.*

HOW THEY BUILD SALES: On any product, the crossed-recess of American Phillips Screws is a "green light" to buyers who stop and look for an outward index of inward quality.

AMERICAN SCREW COMPANY, Main Office: Providence 1, R. I.
Plants at Willimantic, Conn., and Morristown, Pa.
Warehouses at: Chicago 11: 327 E. Illinois St. Detroit 2: 202 Stephenson Bldg.

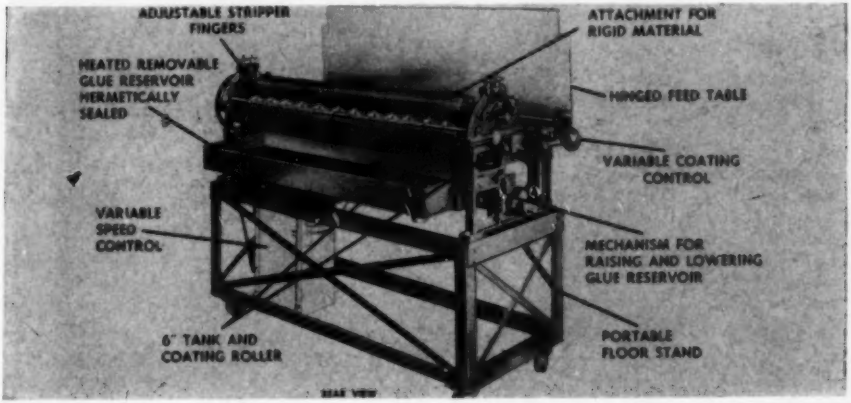
AMERICAN PHILLIPS Screws

ALL TYPES
ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

GLUING MACHINE

A new 46" gluing machine is now available. Among the new features claimed are equal 6" diameter glue roller and ductor roller to help assure rigidity over the full 46" width. Hot glues are kept at the proper temperature with a thermostatically controlled heating unit. The glue tank is hermetically sealed to help maintain uniform distribution of heat and avoid undesirable "hot spots." The tank is removable for quick cleaning. A patented dial glue coating control accurately measures the right amount of adhesive for any material.

Adjustable feed table, equipped with vari-speed motor drive providing a speed ratio from 0 to 100 feet per minute. Other type drives can be used, if required.



Complete information from Potdevin Machine Co., Dept. WD, 1285 38th St., Brooklyn, N. Y.

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18 TONS OF MENGEL MAHOGANY VENEER IN THE MAKING

Direct from the Mengel Company's logging concessions on the African Gold Coast, this giant Mahogany log is now well on its way to becoming top-quality veneer. Six feet in diameter and 23 feet long, it totals 6,200 log-feet, or about six truck loads of normal hardwood logs. This is the largest log ever handled by the Mengel Company, famous producers of Mahogany veneers and lumbers. It will produce about 150,000 feet of excellent quality ribbon-striped Mahogany veneer—enough for more than two carloads of stock panels, 320 three-piece bedroom suites, or 240 dining-room suites!

NEW!

Safe CIRCULAR SAW BLADE!

Takes the DANGER Out of SAWING

Here is the greatest improvement in circular sawing—since the invention of the circular saw. Each P T I Saw Blade has only 8 teeth instead of the customary 100. These teeth are entirely different from the conventional saw tooth—they project only 20/1000" above the non-cutting edge. Thus the cut of each tooth is "controlled" by the non-cutting edge, in contrast to the ordinary saw blade where each tooth cuts right down to its base. This relatively simple alteration in design actually works miracles in the performance of the blade.

Patent Pending

1. Complete Safety From Kick-backs—Since the teeth are only 20/1000" high—they cannot grab the wood and throw it against the operator—eliminating one of the most serious causes of circular saw injuries.
2. Reduced Direct Injuries—Cut Control teeth do not drag the hand into the saw. The non-cutting edge acts as an effective stop to cuts and limits their depth.
3. Cut Chips—Not Sawdust—Unique cutting action produces chips. Easier to clean. Eliminates fire hazard of spontaneous combustion.
4. 30% to 40% Power Saving—Fewer teeth mean fewer cuts to achieve same results—hence less power consumption.
5. Longer Life Without Sharpening—When cutting off chips—the wedge action of the tooth does most of the work—which means less wear on the cutting edge of the teeth.
6. More Efficient Cutting—Each tooth is backed up better against body of blade. It is therefore more rigid, less likely to vibrate—and cuts more smoothly.
7. Quieter Running—Fewer teeth makes saw practically noiseless when running true.
8. Blade Does Not Crack—Blades are made of special Vanadium Steel. In addition—controlling of cut prevents overloading of teeth, a common cause of blade cracking.
9. The P T I Cut Control Saw Blade is the first and original blade of this type—it has been thoroughly tested and approved in leading laboratories and shops of both Europe and U. S.

ORDER TODAY SATISFACTION GUARANTEED!

Here are the prices and sizes, delivered, postpaid. All blades are combination rip and cross cut. (Prices on carbide tipped blades furnished on request.) In ordering, be sure to give the diameter and bore of the blade. Send check or money order or we will ship C.O.D. Satisfaction or money back guaranteed.

7" diameter blade	$ 4.95
8" diameter blade	5.90
10" diameter blade	7.50
12" diameter blade	9.40
14" diameter blade	11.40
16" diameter blade	14.00

P T I INCORPORATED Dept. WWD-151
401 Broadway, New York 13, N. Y.

Gentlemen: Rush me the following units:

Quantity	Blade Diameter	Blade Bore

Please check:
——Money order or check for $——.—Send C.O.D.

Name .....
Address .....
City .....Zone .....State .....

Canadian Distributor: The Preston Woodworking Machinery Co., Ltd., Preston, Ontario, Can.

THE ELECTRIC

LESTO

PORTABLE HAND-SAW

Facilitates any work

SAWS 2″ hard or soft wood

SAWS curves of all types

SAWS Insertions

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Ideal for Cornices

SAW Where You Wish

Designed, Manufactured and Patented by Scintilla, Ltd., Switzerland, since 1944.

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For further information regarding descriptive literature contact:

VICTOR J. KRIEG, INC.

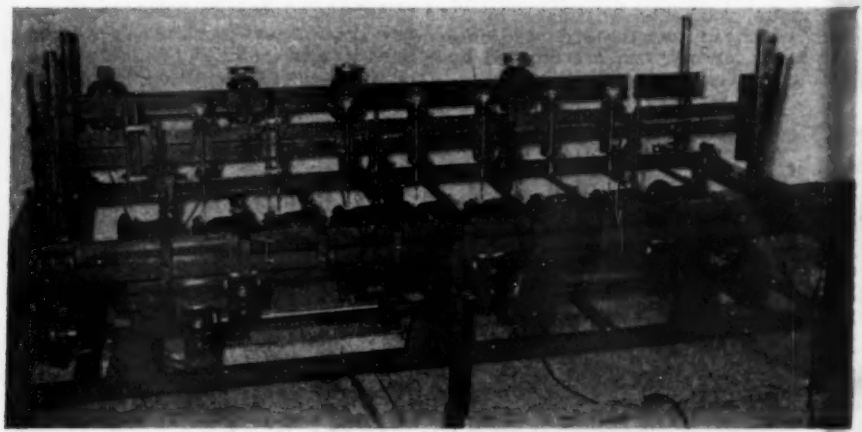
Sole U.S. Representatives for Scintilla Ltd.

55 West 42 Street — **New York 18, N. Y.**

Tel. LOngacre 4-6487 — **Salesmen Wanted**

Equipment and Supplies for the WOOD WORKING INDUSTRY

TIMESAVER LADDER MAKER



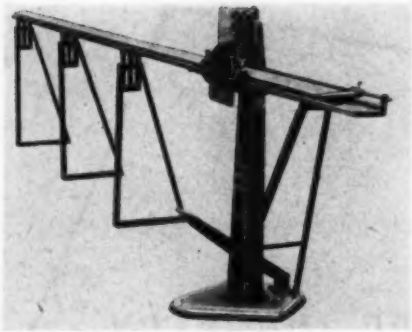
Timesavers, Inc. is now in production on their new "Laddermaker" machine. This machine is really a "timesaver." It is fully automatic in operation and will turn out 6 to 9 complete step ladder rails per minute. This is claimed to be a 90% saving in production time over other methods now in use.

The Timesaver laddermaker is adjustable to any length rails up to 12 feet. It does the complete operation of dado and trimming and drilling for strust, spreader and ears in one automatic operation. It is adjustable from right to left rail operations in a matter of minutes.

For full information and prices write to Timesavers, Inc., 549 W. Washington Street, Chicago 6, Ill.

NEW MITER MACHINE

The Pootatuck Corporation, Stratford, Conn., announces a new Lion miter master for production mitering of stock up to 3" width, an increase in capacity



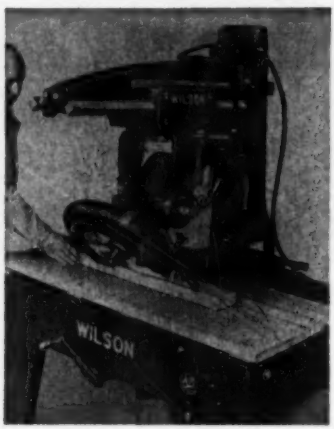
over previous models.

The new machine has a split knife carriage separated by laminated shims, which enable the user to compensate for wear of the sliding parts throughout the life of the machine. Blades are mounted on three adjustable bushings which in turn are screwed into the knife carriage and are secured by lock nuts. This enables the user to adjust the blades very accurately for the angle of cut, and vertical angle. Adjustable bed plates have been machined into the bed and enable the user to adjust the gap between the blades and the bed so that he can avoid any possible breaking out of splinters on the bottom of the moulding being cut.

POLKA DOT PAINT

With the new Plextone finish, it is now possible, in a single spray operation, to secure a multi-color finish on products and interiors — according to Mr. B. F. Ames, General Sales Manager of Maas & Waldstein Co., of Newark, N.J., and Chicago, Ill., manufacturers of lacquers, enamels and synthetics since 1876.

On the finished surface, a single coat of Plextone appears as a network of interlaced but separate colors — a new "polka dot" paint. Each color retains its own identity giving an over-all textured-color effect simulating leather,



BEVEL RIPPING . . .
ONE OF OVER 1000
WILSON OPERATIONS

A WILSON IS YOUR BEST INVESTMENT

WILSON
RADIAL CUTTING MACHINE

MAKE YOUR *"PILE OF STOCK"*
Pay EXTRA Dividends with a
STURDY, SPEEDY, ACCURATE
WILSON

For further information write to

MEDIA MACHINE WORKS, INC.
MEDIA, PENNSYLVANIA, U.S.A.
Est. 1922

cork, granite, marbles and other multi-color materials.

A standard spray gun with a single pressure container is the only equipment needed to apply Plextone, we are told. Plextone can be applied to practically any surface — wood, wallboards, plaster, metals, cement, paper and composition materials. It has already been widely used for finishing such products as displays, mannequins, furniture and caskets.

Maas & Waldstein Co. have been appointed sole manufacturers and distributors under license to produce this product under patents pending.

BOSTITCH ANNOUNCES NEW STAPLING HAMMER

A new and improved stapling hammer—Model H2B—has just been announced by Bostitch, manufacturer of stapling machines and staples. The new Bostitch H2B has been designed especially for high speed tacking and light nailing jobs. Over twenty improvements in design and construction have been made in order to set a new standard of durability and performance. Among these improvements are plating for rust resistance, new style driving lever for better balance, and new type pusher to eliminate jams.

It takes but one hand and one blow to drive a sturdy staple all the way home. Very little effort is needed as the accelerated driver multiplies the force of the blow. The new Bostitch H2B uses staples of .050 x .019 wire, available in several leg lengths.

The manufacturer claims that from lining freight cars to padding crates—from covering furniture to laying roofing paper, there are hundreds of jobs where the new Bostitch H2B can help to cut fastening costs by turning out more work in less time than was possible with hammer and tacks.

For free, descriptive literature, write Bostitch, 1025 Mechanic Street, Westerly, Rhode Island.

INDIVIDUALLY TESTED TO INSURE BETTER PERFORMANCE

HARGRAVE

Quick Clamps
Openings 4 in. to 5 ft.

IMPROVED
Spring Clamps in three convenient sizes

No. 640 Improved "I" Bar Clamp
Openings 1 ft. to 12 ft.

"C" Clamps
Openings ¾ in. to 18 in.

Hand Screws
All popular sizes

• Hargrave Clamps have been constantly improved with the aid of skilled mechanics to offer greater operating advantages and increased durability. Individually tested, they must be stronger, tougher and flaw-free. Made in openings from ¾ in. to 10 ft., from ½ in. to 16 in. deep.

WRITE FOR CATALOG
showing a clamp for every purpose. Also chisels, punches, brace wrenches, star drills, washer cutters, file cleaners, saw vises, etc.

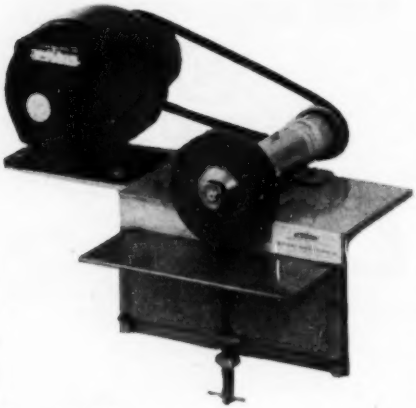
1949 Waverly Ave.
Cincinnati 12, Ohio

HARGRAVE
Tested Tools
THE CINCINNATI TOOL COMPANY

THERE IS AN INDUSTRIAL DISTRIBUTOR STOCK NEAR YOU

BELT SPLICING APARATUS

An abrasive belt splicer is being introduced by the Econaway Manufacturing Company. This abrasive belt splicer will splice any type of abrasive belting, it is claimed.



Econaway skiver.

Cutting and gluing press.

This machine consists of a skiver, rigidly built of mild, hot pressed steel, not cast iron, precision built to close tolerance, with a heavy ball-bearing arbor. The other part of this machine is a cutting and gluing press made of kiln-dried hardwood. It is rigidly built and finished.

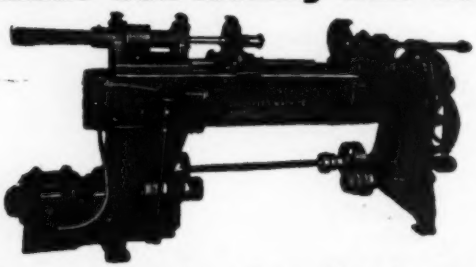
The desire expressed by many companies for an abrasive belt splicer to use in their own factories to make their own belts, gave the Econaway Manufacturing Company its incentive for this invention. The Company also manufactures a steam humidifier for use where controlled humidity is desirable, such as in furniture and paper storage rooms.

G G

GOODSPEED

VARIETY LATHES

Automatic Self-feeding Ball bearing



For various kinds of turnings from the smallest size up to 3" diameter and 7½" long. We can furnish FOUR different types in FOUR different capacities for turnings up to 1½", 2", 2½" and 3" in diameter.

Write for bulletins covering these fast money saving lathes which are easy to set up and cover a wide range of work.

GOODSPEED MACHINE COMPANY

G WINCHENDON, MASS. U. S. A. G

These products are available now, and further details will be sent on request to the Econaway Manufacturing Company, Bellevue, Michigan.

PLASTIC VENEER

The Meyercord Company of Chicago is offering two products of interest. These are photographic re-creations of wood grains, marquetries and marble in actual color, scientifically imposed upon heavy lacquer film in flexible sheet form.

Sans-Arb, available in more than a hundred patterns of woods and wood grains, can be applied on wood or on metal to create the impression of a fine veneer. The material can be cut to dimension and applied to almost any shape and to any smooth surface. The plastic veneer is bonded to the surface and afterwards can be treated by application of wax, lacquer or varnish as desired.

Sans-Marb is the same type of material in various patterns and colors of marble.

For further information about either of these materials, write Graining Division, Dept. WD, of the Company, 5323 W. Lake St., Chicago.

FOUR DRUM SANDER

The Solem four drum endless bed sander is used by many finishing departments as one of the standard production tools for sanding flat surfaces. We are told that through its use subsequent belt sanding is greatly reduced and in many instances entirely eliminated.

Flat materials such as wood, veneered panels, rubber tile, cork, composition board, wallboard, leather, plastics, etc. from 1/32" to 8" thick can be handled.

Prompt Delivery
Factory Trucks

Ask For Literature

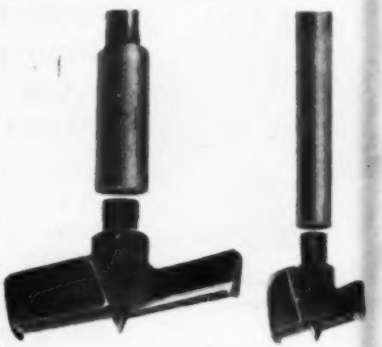
EFFICIENT, ECONOMICAL

Jakes Foundry Co.

400 - 29th Ave. Nashville, Tenn.

PLANETOR CHIP FLOW MACHINE BITS

Supreme in smoothness, speed, endurance

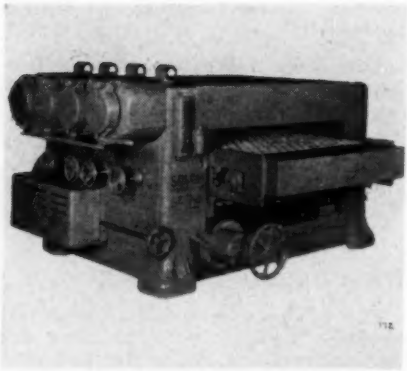


STOCK SIZES: 1" to 4" by 16ths. 4⅛" to 6" by 8ths on special order.

Dealers in Principal Cities

PRICE & RUTZEBECK

BOX 30 HAYWARD, CALIF.



Machines are made in capacities from 31" to 85" wide, and in any 6" multiple between these two figures. The endless bed with rubber cushions provides a conveyor for the work passing through the machine.

Much imperfect sanding, states the manufacturer, is due to overloading the abrasive; the life of the sandpaper is correspondingly reduced by the fracture of the grit under the excessive load. By distributing the cut on four drums and by setting the last drum for light polishing, longer production runs are obtainable.

For complete information and descriptive literature, write Dept. WD, Solem Machine Company, Rockford, Ill.

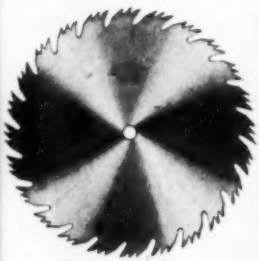
NEW DEHUMIDIFIER

The Walter Haertel Company, manufacturers of specialized industrial dehumidifiers, announce a new junior commercial and industrial Haertel Dehumidifier "50".

Powered with a ½ h.p. hermetically sealed condensing unit, this new addition to the Haertel line has a maximum 24-hour capacity of 50 pounds of water removal from the air.

Haertel-trained air conditioning engineers are available to discuss the multiple uses of Haertel Dehumidifier "50".

HEINEMANN



No. 52 Combination Saw

HIGHEST QUALITY SAW BLADES

Excellent for all Radial Saws. Perfectly Balanced and Tensioned for High Speed.

Made from 10" to 24" Dia.

Write for Detailed Catalog

THE F. HEINEMANN SAW & MFG. CO.
CANTON 6, OHIO

BUILD A BETTER FINISHING DEPT.

Switch to DETROIT "TAC" RAGS and avoid rejects. Remove all dust, lint and sand quickly, efficiently. The standard for 16 years. Order from your supplier today, or send for sample.

FLAME RESISTANT HANDY **DETROIT "TAC" RAG**

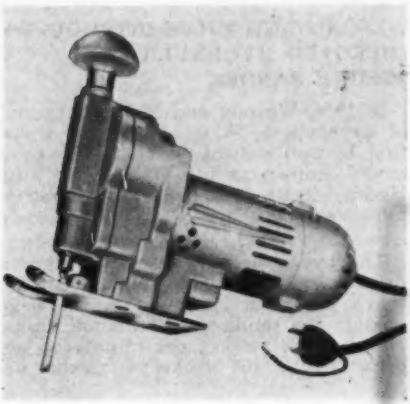
DETRO MFG. & SALES CO., INC., CULVER CITY, CALIF.

Larger Haertel installations are capable of dehumidifying larger warehouses and all models are available with or without heat recovery means. For further information write Dept. WD, Haertel Company, 2840 Fourth Ave., S., Minneapolis, Minn.

MULTI-PURPOSE CUTTING TOOL

A larger model of the Whiz saw has just been announced by the Forsberg Manufacturing Company, Bridgeport, Conn.

Whiz saw model No. 2 will cut wood, bone, fiber and other composition ma-



Hamilton

FACTORY TRUCKS

ESPECIALLY DESIGNED FOR THE WOOD-WORKING INDUSTRY

NO. 800

Cap. 1500 lbs.

Heavy Duty Wheels and Casters

Standard sizes 24" x 48"—30" x 48"—30" x 60". Special sizes and styles to order—capacities up to 7500 lbs.

Write for descriptive circular and low prices.

THE HAMILTON CASTER & MFG. CO.

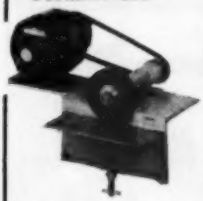
1800 Dixie Highway Hamilton, Ohio

TRADE MARK ECONAWAY REGISTERED

GUARANTEED

The new, economical

ECONAWAY ABRASIVE BELT SPLICER



Precision built.

Will splice any kind of abrasive belts straight and true. Save money and time.

Write for particulars.

MANUFACTURED BY

Econaway Manufacturing Co.

OF

BELLEVUE, MICHIGAN

• • • • *Dealers Wanted* • • • •

terials up to 2" in thickness. The saw can be used as a rip, cross cut or scroll saw. It is lightweight (only 6¾ lbs.).

Whiz saws, Model No. 1 and 2, are manufactured by the Forsberg Mfg. Company, makers of the Whale and Viking hand tools.

WYSONG AND MILES INTRODUCES IMPROVED HYDRAULIC-STROKE SANDER

In 1946, Wysong and Miles Company of Greensboro, N. C., introduced their first hydraulic-stroke sander. The new model, known as the Wysong No. 610 Hydra-Stroke sander, features many improvements.

The hydraulic pump is larger and is driven by a 7½ H.P. motor. Stroke speed has been increased in the new model. The sanding pad carriage travels up to 90 strokes per minute on an 8 foot stroke, 100 stroke per minute on a 6 foot stroke and proportionately faster on shorter strokes. Speed of stroke is changed by turning the hydraulic flow control dial.

The No. 610 Hydra-Stroke sander has only two external lubrication points. All other moving parts run in a fully enclosed oil bath. Maintenance time has been reduced and the chance of stock spoilage caused by dripping oil from over-lubricated points has been eliminated, we are told.

SLAB CUT-OFF SAW

An automatic electro-hydraulic slab cut-off saw is a recent development of Clair Manufacturing Company, Olean, N. Y. Once set in motion this unit requires no attention other than to keep it supplied with slabs. It is claimed to replace two or three men working with ordinary cut-off saws.

In operation, waste slabs simply are

"Jorgensen"
CLAMPS

Jorgensen offers a complete selection: Hand Screws, Drop Forged and Malleable "C" Clamps, Steel Bar Clamps, "Pony" Clamp Fittings and miniature "C" Clamps — the very best in service giving quality.

ADJUSTABLE CLAMP CO.
"The Clamp Folks"
418 N. Ashland Ave., Chicago, 22, U. S. A.

CUT
SAW MAINTENANCE
COSTS!

with the
REYNOLDS
CIRCULAR SAW
GRINDER
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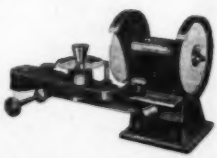

rip, cut-off, combination saws, and dados (5" to 30").

Produces top quality results in fraction of time usually necessary for sharpening, jointing, gumming and tooth forming. Any hook or pitch of tooth and depth of cut is quickly adjusted. Both hands are free to control position of saw while grinding.

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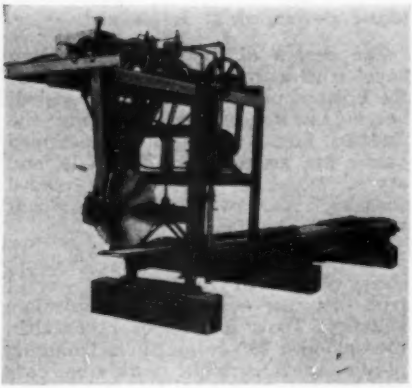
Dept. WD 303 Eddy St. Providence 3, R.I.



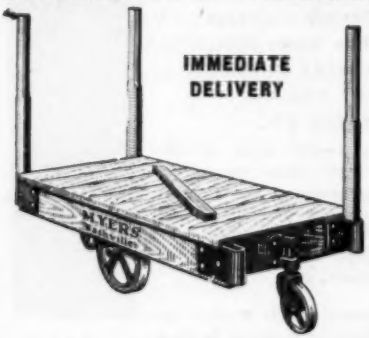
tossed on an endless conveyor which moves forward any predetermined adjustable distance, depending on cut-off lengths desired. Sequence of operation is as follows: (1) Conveyor moves slabs forward desired length beyond path of saw swing. (2) Spring-leaf-chain type hold-down is lowered. (3) Saw arbor is released, and the saw is permitted to feed itself through the slabs. (4) At completion of cut, saw arbor is retracted and held. (5) Hold-down releases and raises clear. (6) Cycle repeats automatically.

For additional details on the Clair automatic Slab Cut-Off Saw, write this publication or direct to Clair Manufacturing Company, 1053 South Union Street, Olean, N. Y.

TOOL FOR LAMINATED PLASTIC FINISH OPERATORS

A new bevel trim tool for finish operations on laminated plastic tops is announced by North American Products Company of Milwaukee, Wisconsin. Where the overhang of laminated plastic glued to plywood cores must be trimmed, the new North American bevel trim tool allows this operation to be completed with router machines. In addition to being up to fifteen times

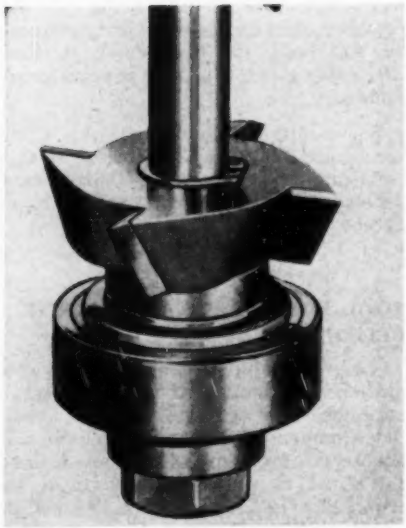
MYERS "TOUGH BUILT" TRUCKS



Capacities: 1500 to 5000 lbs.
Platform Sizes: 21 x 42" to 36 x 72"

Catalog and Prices upon Request

MYERS TRUCK & CASTER CO.
914 Trinity Lane . . . Nashville 7, Tenn.



faster than hand finishing, the bevel trim tool edges the tops more evenly and accurately than any methods heretofore developed, it is claimed.

The design of the North American bevel trim tool prevents "digging into" the finished plastic top. A precision ball bearing guide prevents marring the finished edging strip. Carbide-tipped blades are ground to a 29° angle, and are so set as to provide a downward shearing action away from the top surface of the plastic.

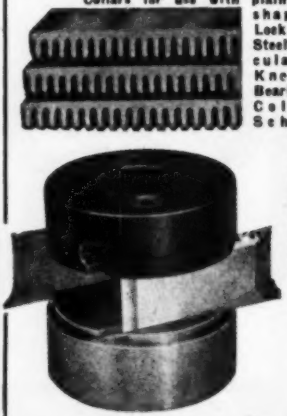
Stocked in ¼", $\frac{5}{16}$", ⅜" and ½" shank sizes, the North American 29° bevel trim tools are available for immediate delivery. Tools for angles other than the standard 29° or for flush trimming plastic sheet straight with the core can be also furnished. Direct inquiries to North American Products Company, Dept. WD, 3100 West Cherry Street, Milwaukee, Wisconsin.

HESTON & ANDERSON 6" JOINTER

A 6" jointer with table 60" overall is announced by Heston & Anderson. Besides the length of the table, this

KNOUREK (PATENT) BALL BEARING SHAPER COLLARS

Knourek Patent Ball Bearing Shaper Collars for use with plain beveled edge shaper steel or Lock Edge Shaper Steel. Ask for circular covering Knourek Ball Bearing Shaper Collars and Schmidt Lock Edge Collars. This combination prevents accidents on shaper and knives cannot become loose and fly out of collars.



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A handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

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HIGHEST QUALITY

Now available in kiln dried Beech, Hickory and Hard Maple in ¼", 5/16", ⅜", 7/16", ½", ⅝" and ¾" sizes. Spiral grooved. Also ready for shipment are Dowel Rods made from Hard woods in sizes 3/16" through 1-7/16". Let us quote on your requirements. Prompt Shipment.

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Burton Saw Co.
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MANUFACTURERS OF

- LOG BANDS "that stand the feed"
- BAND RESAWS "that cut straight"
- NARROW BANDS "that last longer"

Give Your Band Saw Operator A Treat

A millman 2000 miles away telephoned to see if we would recondition his old saws (other makes) "to cut like the new one" we had just made for him.

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A Dependable, Inexpensive Addition to Your Material Handling Equipment.

LIFT TRUCK JACK & PLATFORM

The lowest price combination available in semi-mobile factory or shop handling equipment. You can't beat it for semi-heavy work or convenience. Equipped with steel or rubber wheels.

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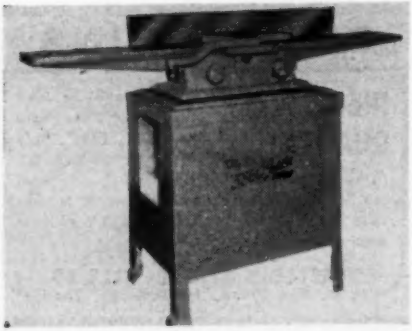
Grand Rapids 4, Michigan



jointer provides other facilities for speeding precision jointing operations.

The setting of each table is controlled by handwheels located in the front of the jointer. They are mounted on dovetailed ways, gibbed for maintaining alignment.

A balanced three-knife head 2⅞" diameter is used. It operates at 6000 rpm, 18,000 cuts per minute, on heavy duty, dust-proof, life-sealed bearings. The fence or guide is 37"x4". This long fence is of assistance to the operator in holding close limits.

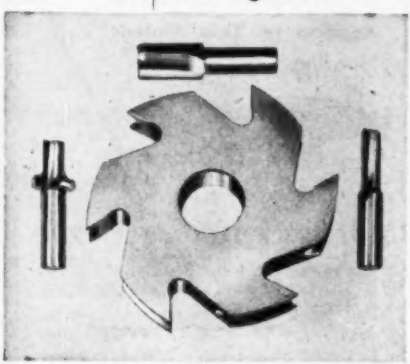
Manufacturers, Heston & Anderson, Fairfield, Iowa.

QUARTER INCH DRILL

Multiple-hole drilling for aircraft, trailer, auto body, and furniture assembly work and other production jobs is now being done with speed and precision by the Model 49 heavy dutv Skil Drill. This product of Skilsaw Inc., 5033 Elston Ave., Chicago 30, Ill. has found ready acceptance in many shops throughout the country.

Model 49 is a quarter inch drill with a patented contour-grip handle, scientifically designed to lessen worker fatigue, and boost production. The comfortable contours of this handle are proportioned for relaxed, tension-free grasp and perfect weight distribution in every hand. Model 49 is built to aircraft industry specifications for ease of

Sterling Quality
Woodworking TOOLS



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Shaper Cutters - Sash Cutters

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NEW JIFFY TIRE EASY TO APPLY!
Jiffy Tires go on in less than 5 minutes. No cement, glue, rims, bolts or special tools needed. And, Jiffy Tires are made in sizes to fit any bandsaw wheel. Molded from tread rubber with steel backbone. Carter products universally accepted as standard equipment by leading bandsaw manufacturers.
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44" vertical band resaw

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EAU CLAIRE, WISCONSIN

"World's Largest Producer of Band Resaws"

Better-Built Trucks by TOWSLEY

give better service, last longer, cost less in the long run.

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A NEW, FAST OPERATION TIMED IN SECONDS!

This tool is used by a majority of plants where hanger bolt driving is done on a high production basis. Can be operated at any speed which is safe for driving the hanger bolt. (It is not necessary to stop rotation at any time.)

- AUTOMATIC TAKE-UP FOR WEAR ON JAWS
- REVERSING POSITION OF CLUTCH GIVES DOUBLE WEAR AT HALF COST
- AFFORDS ACCURATE PROJECTION HEIGHTS
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company names, trademarks, initials, serial numbers, or any design — on wood, leather, rubber or plastics.

For furniture, tires, movable equipment such as shovels and ladders, wooden shipping cases, tool handles and hundreds of other articles where permanent identification is desirable.

Send specifications for quotation.

By the makers of Vulcan Electric Soldering Pots and Electric Soldering Tools.

VULCAN ELECTRIC CO.

Danvers 11, Mass.

handling, compactness and lightweight.

For further information write Dept. WD of the above Company.

SPEED CONTROL VALVES

A new line of "Flo-Set" Speed Control Valves has been announced by Hanna Engineering Works, Chicago. The valves, available in three sizes—¼", ⅜", and ½"—feature micrometer graduations for precision speed con-

trol of low pressure cylinders. A fourth speed control valve, the ¼" Jr., specifically designed for use with tubing, functions the same as the larger size Flo-Set valves but does not include the micrometer adjustments. The new valves are suitable for air, water or oil control, with maximum pressure to 250 p.s.i., and maximum temperature to 250° F. They may be mounted in any position.

The face of one end is marked "Controlled Flow Out—Free Flow In" and the other end face is marked "Controlled Flow In—Free Flow Out". Controlled flow means that the orifice controlling the flow can be adjusted from zero to full size opening—with one revolution of the adjustment sleeve. Graduations are in hundredths of a revolution, with each hundredth representing 1/100 of the pipe area. Free flow means unrestricted flow through an orifice equal to the pipe area.

Valves are designed so inside construction is not damaged if excessive torque is applied during installation. All metal parts are made of aluminum except for stainless steel springs. Seals and poppets are of molded synthetic. New Hanna Bulletin 253 gives complete details and specifications. Write to the Company at 1765 Elston Ave., Chicago.

PRECISION TAPES

A new line of precision case-type steel tapes is being introduced by the L. S. Starrett Co., Athol, Mass.

The No. 530 series features a ⅜" wide tape line made of high quality tape steel, accurately etched with bright steel graduations on a no-glare black background. Available in 25, 50, 75 and 100 foot lengths with quick-reading gradu-

STOP DUST

DUSTKOPS — **20 Models**

UNIT TYPE — 300 to 3600 cfm
LOW COST — ¼ hp to 5 hp

AVAILABLE FROM STOCK

For: Grinders, buffers, polishers, woodworking, lint . . . All Dusts.

Send for Cat. 605a; describe problem.

AGET-DETROIT CO. • ANN ARBOR, MICH.

ations in feet, inches and eighths the entire length of the line. Also in metric or both English and metric graduations.

Cases are of two plated steel sections covered by heavy, weather-resistant artificial leather. The tape has a winding handle which folds flush with the case when not in use.

Other Starrett case-type steel tapes are available with similar features, but with wider or narrower tape line. A wide choice of lengths and styles of graduation to suit any need.

Complete information from Dept. WD, the above company.

SIMONDS ADDS TO MACHINE KNIFE LINE

Corrugated back knives for use in planer mills are now furnished by Simonds Saw and Steel Co., Fitchburg, Massachusetts according to an announcement just released. Made of high alloy steel from Simonds own mill, this new line of knives will be supplied in standard lengths, widths and thicknesses.

DECAZNOT WOOD PRESERVATIVE

Decaznot, a clear wood preservative, is the feature of the C-4 line of wood preservatives described in Catalog 501-WP, issued by Coopers Creek Chemical Corporation. West Conshohocken, Pa., manufacturers of coal-tar and asphalt products. Also included in this catalog is information on C-4 black creosote; Coopersote brown creosote oil; Puresote, a light-brown extra quality creosote; clear creosote shingle stain; black tree wound paint; and Exterm termite destroyer.

Decaznot is a clear preservative, primer and sealer for lumber, millwork, sash, screens, doors, outdoors furniture, fences, tents, awnings, seed boxes, and hundreds of other applications. For brush, spray or dipping, it affords deep and thorough permanent penetration and dries with practically no surface discoloration.

For further information write Dept. WD, of the above Company.

DRAWINGS FOR CABINET CONSTRUCTION

A simple working drawing for the construction of cabinet doors is available free from the sales engineering department of Masonite Corporation, 111 West Washington St., Chicago 2, Ill. Ask for drawing No. AD-190. The facing is Masonite ⅛" tempered Presdwood, which has proved popular in both custom-built cabinets and those manufactured by leading companies.

READER SERVICE

For locating equipment, supplies or machinery, write our Market Service. We are glad to help you.

"The government seems determined to take care of me, despite anything I may do to prove myself undeserving."

—Anonymous

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WILL ADHERE TO WOOD METAL - WALLS - ETC.
ADHESIVE PRODUCTS CORPORATION
1660 BOONE AVE. NEW YORK, N.Y.

FOLDER ON MOISTURE-PROOF CUTTING WHEELS

Moisture-proofed abrasive cutting wheels are described in a 6-page folder just published by Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago 7, Ill. Booklet illustrates advantages and convenient features of this new development in abrasives to help assure maximum cutting efficiency.

Copies of the booklet may be obtained by writing Dept. WD, of the above Company.

HEAD GRINDER LITERATURE

Dependable Machine Company, Inc., manufacturers of knife grinding equipment and woodworking machinery, announce the release of Bulletin C-5.

This bulletin pictures and describes models 101 and 101-A side head grinders. Dependable's new, head setting gauge G-11, now furnished as standard equipment, is described. The advantages of this new type gauge are given, and it is claimed to obsolete the old spring pointer type.

Full specifications of the machines are given along with action pictures. Free copies of bulletin C-5 with latest price sheet may be obtained by writing Dependable Machine Company, Inc., Dept. WD, Greensboro, N. C.

NEW HELP FOR BUSINESS

A newspaper, "The Government Procurement Weekly Review & Small Business Journal, designed as an aid to industry, and especially to small business, in the current mobilization program, is now being published by Trilane Associates, Inc.

The new paper will aid manufacturers seeking government sub-contracts through its comprehensive weekly listings of major government awards, and will be of interest to industry through its complete coverage of the overall procurement and mobilization picture.

Advertising & subscription rates are available on request from the publishers, Trilane Associates, Inc., Dept. WD, 1 Hudson St., New York 13, N. Y.

CUTTERS, SHAPER, ROUTER JOINTER & CARVING

WRITE FOR CATALOG
ANTHE MACHINE WKS.—Covington, Ky.

USES FOR FIR

"Where to Use Douglas Fir Lumber," a 16-page, two-color booklet featuring "the world's most versatile wood," has just been published by the West Coast Lumbermen's Association. This announcement will be welcome news to retail lumber dealers, architects, engineers, builders and specifiers, who for years have specified, purchased and depended upon Douglas fir for structural and industrial uses, house construction and farm buildings.

This publication, profusely illustrated, will serve as very useful reference mamaterial. It covers the properties, characteristics and grades of Douglas fir; gives recommended grades for interior and exterior uses and points out the hundreds of uses of this dependable softwood.

Copies of the new Douglas fir booklet may be obtained in quantity without charge, by writing the West Coast Lumbermen's Association, 1410 S.W. Morrison Street, Portland 5, Oregon.

POWER AUGER BITS

A special feature of Whitman & Barnes' new catalog is the power auger bit. Several features claimed for this power auger bit include: can be operated at high speeds; drills accurately; will bore hard and softwoods, including plywoods, regardless of knots and grain; keen cutting edges uniformly hardened; can be used in all electric drills having ¼" or larger chuck capacity.

This new bit is available in the following sizes ⅜", ½", ⅝", ¾", ¼" and 1". Especially recommended for woodworkers, pattern makers, boat builders, cabinet shops, etc.

A copy of the catalog—which completely describes all of their drills and drill sets available—may be had from the Company, or, if you prefer, a folder giving the qualifications, description, etc., of the new power auger bits. In writing, specify catalog or folder. Write to Dept. WD, Whitman & Barnes, Plymouth, Mich.

STATISTICS ON WOOD PRESERVATION

Wood-preservation statistics for 1949, as compiled by Henry B. Steer of the Forest Service, U. S. Department of Agriculture, show that the total volume of wood given preservative and fire-retardant treatment was about 1% less than in 1948, acording to Fred W. Gottschalk, president of the American Wood-Preservers' Association and technical director of the American Lumber & Treating Co. Volume in 1949 totalled 290,555,934 cubic feet compared with 292,357,303 cubic feet in 1948. All time high was 362,009,047 cubic feet treated in 1929.

Construction timbers, poles, and piles showed increases of 14.7%, 8.8%, and 2.9% respectively. All other products decreased as follows—crossarms off 0.2%, crossties off 2.8%, switch ties off 6.0%, and wood blocks off 58.7%.

The South, with more than 40% of the plants, treated about half of the total U. S. production. Texas leads the states in number of plants with 21, Louisiana is second with 17, and Washington is third with 16.

In 1949 the industry consumed a total of 237,699,984 gallons of oil preservatives and 7,801,163 pounds of solid preservatives.

In terms of material treated, creosote and creosote-coal tar solution increased from 210,425,748 cubic feet in 1948 to 217,921,371 cubic feet in 1949; treatment with creosote-petroleum solution dropped from 53,179,997 to 51,992,458 cubic feet; treatment with creosote-petroleum and fortified with pentachlorophenol dropped from 9,387,719 to 4,226,279 cubic feet.

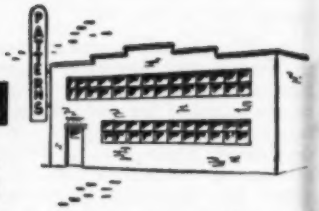
Figures for volume of material treated with solid preservatives are as follows—material treated with chromated zinc chloride dropped from 5,438,629 cubic feet in 1948 to 3,777,319 cubic feet in 1949; treatment with Wolman salts dropped from 4,186,480 to 3,239,581 cubic feet; treatment with Celcure dropped from 266,334 to 146,274 cubic feet; treatment with petroleum-pentachlorophenol dropped from 9,387,719 to 4,226,279 cubic feet.

Mechanics Through The Ages

A REMARKABLY MODERN-LIKE BREECH LOADING RIFLE IS SAID TO HAVE BEEN INVENTED IN 1642 BY THE KING OF FRANCE.
FOR 45 YEARS FOLLOWING THE DEATH OF JAMES WATT, HIS HOME WORKSHOP WAS LEFT EXACTLY AS IT WAS THE LAST TIME HE LEFT IT; FOR NEARLY 30 YEARS NO ONE STEPPED INSIDE THE ROOM. IT WAS FINALLY OPENED TO VISITORS IN 1865. THIS WAS IN ACCORDANCE WITH A WILL LEFT BY WATT'S SON.
THE ANCIENT STONE MONUMENTS OF PERU WERE ENGRAVED WITH TOOLS MADE OF COPPER WHICH THE NATIVES KNEW HOW TO HARDEN.

They all use...

Moak Hand Planers and Jointers



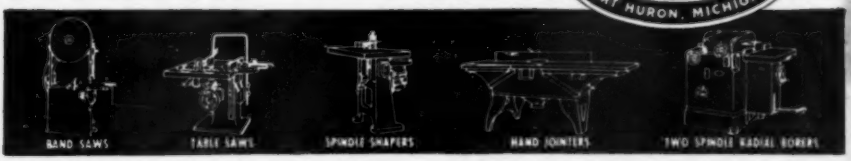
FOR FAST-FEED, VIBRATIONLESS PRODUCTION IN DOZENS OF SHOP JOBS

You get more for your money in Moak Hand Planers and Jointers, the indispensable shop tool for jointing, planing out of wind; for rabbeting and beveling.

Tungsten steel knives are fitted in the high carbon alloy steel cylinder head, the head mounted in self-aligning ball bearings enclosed in dust-proof housings. Available in sizes for planing 12" and 16" lumber; equipped with ½" rabbeting groove, adjustable bevel gauge.

Get the facts **on Moak Hand Planers and Jointers right away. Write for our illustrated descriptive and specification folder.**

MOAK MACHINE & TOOL CO.
MOAK
PORT HURON, MICHIGAN



VOLUME OF HEAVY WOOD WASTE AT SOUTHERN PINE SAWMILLS

For every thousand board feet of lumber they cut, southern pine sawmills produce about half a cord of heavy wood waste, according to a study recently made at 16 pine mills in northern Louisiana and southern and central Arkansas. If the bark is removed before the logs are sawed, most of the waste is suitable for pulp chips.

The study, made by R. D. Carpenter of the Southern Forest Experiment Station in cooperation with the Southern Kraft Division of International Paper Company, found that the diameter of the logs being sawed influenced the amount of waste more than did size or equipment of the mill.

In all mills, the larger the log the less the waste per thousand board feet of lumber sawed. The average amount of waste suitable for pulp chips increased more or less regularly as log diameter decreased. Thus logs 23 inches in diameter produced about 0.3 cord of waste per thousand board feet (green lumber tally) of lumber sawed, while 6-inch logs had about 0.8 cord of waste per thousand feet of lumber.

Mills were divided into four classes according to the sawing equipment. Classes ranged from large mills with a band headsaw and resaw (class 1) to small portable mills with inserted-tooth circular headsaws and no resaw (class 4).

For logs of most diameters, class 2 mills (solid-tooth circular headsaw with resaw and shotgun feed) produced less waste than mills of other classes. Class 4 mills had somewhat more waste than other mills in logs between 7 and 15 inches in diameter.

Mills in classes 1 and 2 usually got the most lumber from a log of given diameter, apparently because they had thinner headsaws as well as band resaws, and therefore cut less kerf (class 3 mills had a solid-tooth circular headsaw, steam feed, but no resaw).

For their total 1948 output, mills in classes 3 and 4 produced 0.61 cord of chippable heavy waste per thousand feet of lumber output. Class 1 mills produced 0.43 cord and class 2 mills 0.46 cord. It was found that mills in classes 2, 3, and 4 get 95 per cent of their annual cut from logs under 16 inches in diameter. Class 1 mills get only 82 percent of their cut from logs of this size.

In 1948, the average study mill in class 1 or 2 cut about 8,000 thousand board feet of pine lumber and thus produced about 3,500 cords of chippable waste during the year. Class 3 study mills, with an average cut of 4,800 thousand feet, had 2,900 cords of chippable waste. Class 4 mills averaged 4,000 feet of lumber and 2,400 cords of waste.

A detailed report of the study, including directions for using the results to calculate waste production at any southern pine mill, has been published as Occasional Paper 115 of the Southern Forest Experiment Station, New Orleans. Copies may be had on request to the Station, which is a branch of the Forest Service, U. S. Department of Agriculture.

FILM ON LUMBER GRADING

"The Magic of Lumber," a new 16mm motion picture which tells the story of lumber grading, has been produced by the West Coast Bureau of Lumber Grades and Inspection, and will be ready for distribution January 1, 1951.

Fast-paced and informative, "The Magic of Lumber" represents the first attempt ever made to give a pictorial explanation of the science of lumber grading.

The 20-minute, color and sound film explores the formation of characteristics in the tree, reveals the laboratory tests upon which grading rules are based, explains the work of the lumber grader, and classifies lumber grades on the basis of use.

Bookings for the films may be obtained without charge by writing the West Coast Lumbermen's Association, 1410 S.W. Morrison St., Portland 5, Oregon.

THE MARKET PLACE

FOR SERVICE
FOR EMPLOYMENT
FOR USED AND REBUILT EQUIPMENT

Rates for Classified Advertisements

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of $7.00 for name and address and a five line advertisement. For additional lines, only 70c per line.

DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.00; 2 inches $16.00; 3 inches (Maximum), $23.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

FOR SALE

Largest stock of used machinery in America, many ball-bearing, motorized. Substantial savings. Prompt shipment. Write for our list. We equip plants completely. We also buy complete plants or individual machines.

Earle Hart Woodworking Machine Co.
565 W. Washington Blvd., Chicago 6, Ill.
Phone RAndolph 6-4970

FOR SALE

Woodward Machinery Co.
309 E. Second St. Cincinnati 2, Ohio

Band saw, Crescent, 32 in., $175
Chuck Mch., hd. feed with 4 heads, $60
Cutoff saw, Porter A-43 st. line BB MD, $250
Glue jointer, Yates, No. 213 with BB, $550
Jointer, Buss 24 in. round head, $185
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Beach Carriage C.O. Saw
Swing Cut Off Saws (several)
Fay & Egan Table C. O. Saw
DOWEL MACHINES: Hawker No. 2 Ball Br. ¼"-2" cap. M.D.
American No. 1 cap. ¼"-1½", 10 sizes cutters
Fay & Egan No. 406 Rod Machine
Bench Type Hand Feed Dowel Mch.
JIG SAWS: Oliver No. 173-B Ball Br. Self Contained Motor built in. New at Bargain Price
Beach No. 1 Tilting Table Scroll Saw
JOINTERS:
Cordesman 9" Rd. Hd. Jointer
12" 4 knife Rd. Hd. Jointer
16" Fay & Egan No. 316 B.B. M.D.
16" American B.B. 4 knife Motor Dr.
Smith 16" 4 knife Jointer
Fay & Egan 20" rd. hd. Jointer
Fay & Egan No. 316 20" Rd. Hd. M.D.
Northfield (Late) 12" B.B. Motor on Hd.
Oliver No. 12 24" Rd. Hd. Jointer
Fay & Egan 24" No. 115 Belt or Motor Dr.
LATHE: Oliver 12"x5 ft. Sgl. Ph. Motor Headstock 24" sw. 7 ft. Iron Bed Pattern w/Hand Fd. Carr. M.D.
Wood Lathe Sets 12" to 24" swing
MORTISERS:
New Britain No. 4 Chain with H. C. Attach.
New Britain No. 7 Chain, Compound Table M.D.
Wysong & Miles No. 134 H. C. Auto. Feed
Colladay Vert. H. C. Motor on spdl. B.B.
American No. 20 H.C. Comp. Table M.D.
American H C. Horizontal Auto. Feed
MOULDERS:
4" 4 side Ball Br. Electric (New)
Colladay 5" 4 side
American No. 3 Heavy 6" 4 side
Fay & Egan No. 207 7" 4 side
American 8" 4 side
Hermance No. 50 8" 4 side Bab.
Hermance 10" 4 side
American No. 505 10" 4 side
Fay & Egan No. 184 12" 4 side
NAILING MACHINES:
Grammes 4 track Cigar Box Nailer
Doig 2 track Cigar Box Nailer
Doig 3 track Close Back Nailer
Doig 6 track Close Back Nailer
Doig 10 track Close Back Nailer M.D.
Doig 14 track O.B. Nailer
Doig 14 track O.B. Nailer w. Side Arm
Doig 18 track O.B. Nailer w. Side Arm
PLANERS—DOUBLE:
Berlin No. 177 30"x12" $750.00
American 26"x8" Double
Whitney P-6 30"x7" Double Rd. Hd. Sect. K. & C. B.
PLANERS—SINGLE:
Whitney 30"x7" Sgl. Rd. Hd., Electric
Crescent 26"x8" Var. Feed D. M. D.
Crescent No. 224 24"x6" Var. Feed M. D.
Oliver No. 99 24"x6" single
Fay & Egan No. 2 24"x6"
American No. 1 20"x6"
L. Power 24"x6" Motor coupled Head
New 16"x6" B. B. 3 knife rd. Hd. $524.00
RADIAL SAWS:
Monarch Uni-Point 5 hp., 3 ph.
NEW MULTIPLEX RADIAL SAWS IN STOCK:
No. 20-A ½ hp. single ph.
No. 30-A ¾ hp. single ph.
No. 40-A 1½ hp. single ph.
No. 50-A 5 hp., 3 ph.
RIP SAWS:
Falls No. 103 St. Line B. B. 15 hp. motor
Falls No. 103 St. Line B. B. Belt Dr.
Greenlee No. 427 Self Feed
Greenlee No. 429 Self Feed 12" cap.
Yates American No. 0 Self Feed B. B. 15 hp. built in on arbor.
Bel-Saw Gang Self Feed
ROUTERS:
Kelley Elect. Stair Router 3 ph.
Cincinnati Elect. Stair Router
Hunter Elect. Stair Router $100.00
Duro Elect. Floor Type
Portable 1 hp. and 2 hp. New
SASH COPERS:
American Foot Power Sash Coper
Electric Bench Type Sash Coper
SAW FILING MACHINERY:
Foley Band Saw Filer
Wardwell Band Saw Filer
Covel Resaw 4" Tension Rolls
Power Band Saw Setter
SAW TABLES
Yates-Amer. No. 0 Variety Motor Arbor
Crescent No. 2, 3, and 5 Universal
SANDERS:
Smith No. 401-D 3 dr. Endless Bed M D.
Yates Berlin 48" 3 dr. roll feed
American No. 15 24" single dr. Hand Feed
American No. 15 30" single dr. Hand Feed
Mattison No. 115 Variety Belt Sander
Wysong & Miles No. 171 Belt Sander
Yates Amer. Comb. 15" disc & Belt M.D.
Yates Amer. Comb. 15" disc & Drum M.D.
Wysong & Miles No. 303 Comb. 26" Disc
SHAPERS
Porter No. 105 Sgl. B.B. M.D.
Crescent S-2 B.B. M.D.
Fay & Egan No. 265 Dbl.
Crescent Dbl. Spindle
Amer. No. 30 Dbl. B.B. M. on Spdles. w/Freq. Chgr.

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Hand Jointers — Mitre Saws — Self-Feed Rip Saw
32-in. Circular Resaw — 2-Spdl. Horiz. Borer — 24-in. Single Planer
Multiplex Saws and Delta Machines

BAND SAWS
Tannewitz—Greenlee—American—Crescent—
Mosk 36" BB M.D.
Yates-American 36" BB M.D.
Crescent 36-in. tilting frame
American 42" V-belt M.D.
Tannewitz 42" M.D.

BAND RIP AND RESAWS
Yates No. 312 44" chain-feed hand rip
Newman No. 117 circular resaw BB M.D.
McDonough 62" Vertical Band Resaw

BORING MACHINES
Rogers Single Spindle Horizontal Borer
Greenlee No. 363 6-spindle universal M.D.
New Wysong & Miles sgle. spdle., vert. d.m.d.
Greenlee No. 356 single-spdle. vert., d.m.d.
Greenlee 36-in. No. 369 vert. gang. 8-spd., m.d.
Andrew 4-ft. vert. gang. 4 spindles.
Root "B-M" 16-spindle, cluster hd., motor-dr.

BLOWERS AND FANS
American No. 80E with 40-h.p. coupled motor.
G.R. No. 50 ball-bearing, 40-h.p. motor
Sturtevant No. 25-30-35 Mill Exhausters

CLAMPS—GLUE ROOM EQUIPMENT
Taylor 6-ft. 12-sec. wheel type clamp carrier.
Black Bros. 10" 50-sec. power feed
Black Bros. No. 2 2D 26-in. dbl. resin sprdr.
Greenlee No. 599 frame and furniture clamp

FILING ROOM MACHINERY
Black Diamond band saw filer.
Hanchett band saw brazer.
Rogers 38" cup wheel auto. knife grinder
Hanchett No. 608 lap gr. b.d. max. cap. 8" wide
Black Diamond No. 5 circular saw filer, M.D.
Covel-Hanchett No. 325 thin knife grinder

JIG SAWS
Smith—Colladay—Jones Superior M.D.

JOINTERS
Mosk 16" rnd. hd. motor on arbor
Porter, American, Oliver, Sidney, Fay & Egan from 8" to 30" wide—several have feeding attachments—tell us what you need
Yates and Diehl semt. feed glue jointers, M.D.
Yates No. 213 continuous feed, V-belt, m.d.
Mattison-Greenlee D-818 continuous-feed.
American No. 1 24" Ball Brg. Motor Drive

LATHES
Imperial autom. shaping lathe. M.D.
Mattison No. 55-F 30-in. auto. shaping, M.D.
Whitney 50-in. back knife gage lathe
Mattison No. 214 copying lathe
50" Mattison hexagon T-slot heads with carriers and knives 2-11/16" bore
Yates-American T5 Auto. Shaping, M.D.

MORTISERS
Greenlee No. 226 Hollow Chisel, belt drive
New Britain Nos. 2 and 7 chain, motor-drive

MOULDERS
Rowley-Hermanos 6-in., coupled motor drive.
Newman 4"x4" all Electric
Yates No. C-89 10"x4" all Electric

PLANERS
Berlin No. 177 30"x12" Double Belt dr.
Yates No. 156 20-9n. rd. hd., m.d.
Porter No. 401 24" round head BB D.M.D.
Whitney 44-in. single, motor-drive
Oliver No. 61, 24-in. single Motor Dr.
Buss 26", 30" & 36", single B.B. M.D.
Buss 36" Single Ball Brg. Motor Dr.

ROUTERS
Carter Type TR—Porter No. 600—Ekstrom-Carlson No. 24—Onsrud Type A4RR Sgl. spindle radial—M.D.

SHAPERS
Whitney No. 182, sgl., D. M.D., 56x40" table
Whitney No. 134 double-spindle, dir. M.D.
Amer. No. 20 dbl.-spdl. dir. M.D. freq. changer
Sidney double b-b short belted M.D.
Advance double-spindle, ball-bearing, mtr. dr.
American dbl. spindle, belted m.d.
Oliver No. 288T Double Spindle short belted MD

SANDERS
Fay & Egan 30" 3-drum roll-feed.
Yates No. 401 43" 3-drum roll feed.
Duplex moulding sander
Buss-2-spindle vertical, oscillating belt drive
Wysong & Miles No. 164 universal belt, m.d.
Yates No. 431, 43-in., 3-drum sand-bed, m.d.
Yates No. 421, 49-in. 6-drum with motors

MITRE SAWS
Tannewitz tilt-table, motor on arbor.
Crescent No. 18 roller tilt-table, direct m.d.
Whitney No. 77 Tilting arbor, direct M.D.

CUT-OFF SAWS
Jenkins No. 97, 108"x48" Double End chain feed with copes, direct M.D.
Multiplex No. 40A radial arm, 1½ h.p.
Fay & Egan No. 306 butting saw
Greenlee No. 451 auto. cut-off and dado
Buss double cabinet type, motor-drive
Fay & Egan No. 281 Chain-Feed, dbl., B.D., max. 6'0"
Porter 43 SLA straight line D.M.D.

RIP SAWS
Yates No. 255 Self feed with motor
Yates G77 chain-feed, D.M.D.
Smith No. 335A self-feed, belt or motor-drive.
Mattison No. 207 chain-feed, motor-drive

TENONERS
Greenlee No. 334, Single end wth cut-off, no copes, dir. m.d.
Smith No. 225CE single-end with copes.
Houston single-end with copes, rolling table
Wilkin-Challoner No. 70 90x48 in. double end, electric

This is only a partial list — Send or call your inquiries

1965 E. Milwaukee — Detroit 11, Michigan
Telephone TRinity 2-6442

Look These Over —

Greenlee No. 369 — 46" Multiple Vertical Borer, m.d.
Greenlee No. 370 Multiple Horizontal Borer, 65 in. capacity
Andrews 5 ft. Multiple Vertical Borer
Jenkins Type R Dowel Machine, motor drive
Dodds 12 Spindle Dovetailer
Diehl No. 60 Glue Jointer, ballbearing, motor drive
Yates-American C-89 - 6 in. Electric Moulder
Vonnegut 6 in. Electric Moulder, hopper feed
Yates-American C-88 - 8 in. Electric Moulder
Woods No. 76-M - 30 in. Heavy Duty Single Planer, 30 H.P. direct motor drive
American No. 666 - 36 in. Double Cabinet Planer, d.m.d.
Buss No. 4 - 30 in. Double Cabinet Planer, d.m.d.
Jones-Superior No. 46 Self Contained Jig Saw, 2 H.P.
Tannewitz Tilting Arbor Saw, 5 H.P.
Mattison No. 207 Chain Feed Ripsaw, 10 H.P. V drive
Diehl No. 75 Chain Feed Ripsaw, motor driven
Smith 60" 2 Drum Endless Bed Sander, ballbearing, m.d.
Mereen-Johnson No. 440 Gang Cleat Saw, ballbearing
Bates Spur Feed Ripsaw, ballbearing, 20 H.P. V-drive
Onsrud WA-50 Automatic Shaper, complete with clamps
Billstrom 29-section Clamp Carrier
Large stock of Doig and Morgan Nailing Machines, all sizes and types

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Superior 42", ballbearing, motor driven
American 36", ballbearing, motor driven

BORERS
Andrews 60" 6-Spindle, Horizontal, Direct Motor Driven Power Feed.
Greenlee No. 369, 3' Vert. Multi-Spdl., D.M.D.
Greenlee No. 369, 4' Vert. Multi-Spdl., M.D.
Valley City, 2-spdl., adj. radial, motor driven
American 2-spdl., adj., radial, motor driven
Bell 3-spdl., adj., horizontal, M.D. Power Feed
Superior 2 Spindle Adjustable Radial Ballbearing, direct motor driven
Wysong & Miles No. 283B, Sgl. Spdl. Vert., B.B. D.M.D. (Like New)

CARVING MACHINES
Nalstrom 24 Spindle, Direct motor driven, Ballbearing.

CLAMPS—ASSEMBLY
Bell Chair Assembly, Air Operated (like new)
Bell 4-way Hi-Jaw, Air Operated.
Bell 4-way Frame & Chair Back, Air Operated.
Bell No. 95, Revolving Case Clamp, Air Operated.
Handy No. 227, 4-way Box Clamp, foot operated.
Handy Mitre Clamp, 20"x26" maximum

CLAMP CARRIERS
Handy 18-sec., 5 ft. wide, 38" clamps per sec.

DOVETAILERS
Dodds 25 Spindle, motor driven, spiral gears.

DOWEL MACHINERY
Bell No. 4-A capacity ⅛"-2", M.D., B.B.
Hawker No. 2, capacity ⅛"-2", M.D., B.B.
Nash No. 4 Dowel Rod Sander, motor driven

JOINTERS
Fay & Egan No. 217, Continuous Chain Feed
Jenkins No. 3CD, Continuous Chain Feed, B.B., D.M.D.
Superior 16", Round Head, B.B., M.D.
American 12", Round Head, motor driven
Superior 12", Round Head, motor driven

JIG SAWS
American, self-contained
Oliver No. 173 Self-contained, D.M.D.
Superior, Self-contained, motor driven

MORTISERS
Greenlee No. 228 Vert., Hollow Chisel, M.D.

MOULDERS
Hermance No. 50 10" 4-side, motor driven
American No. 1, 4", 4-Side, Motor Driven
Vonnegut 6", 4-side, D.M.D., B.B., Elec.
Mattison No. 229, 10", 4-side, D.M.D., B.B., Elec.
Houston, 10", 4-side

PLANERS
Superior 28" Single, Motor Driven
Buss No. 4, 30", sgl. cabinet, D.M.D., B.B.
L. Power 24"x 6" Planer-Matcher, motor driven
Yates No. 156, 26", single, motor driven
American No. 112, 30" single, motor driven

ROUTERS
Porter No. 502, 2-spdl., B.B., D.M.D.

SANDERS
43" H.B. Smith, 3-Drum Endless Bed, D.M.D.
Indiana No. 7 Hand Block Belt B.B., d. m. d.
American 31", 2-drum, Roll Feed, M.D.
Curtis No. 64 8' Auto. Stroke, motor driven
American No. 2, 24" Disc and Oscillating Spdl.
American No. 5 Drum Sander, D.M.D.
Nash No. 4 Round Stock and Dowel Sander

SHAPERS
Onsrud W125 72" Automatic, multiple stations, B.B. direct motor driven, with frequency changer

SAWS—CUT-OFF
Buss Double End, Motor Driven
Racine Floor Type—motor driven
Fay & Egan Double End, Motor Driven.

SAWS—RIP
American No. 15 Chain Feed, motor driven
American No. 40 Chain Feed, Ballbearing, D.M.D.
Defiance No. 21-D Chain Feed—motor driven
Mattison No. 207 Chain Feed, Ballbearing, D.M.D.
Yates No. G-2, Chain Feed, Direct Motor Driven, Ballbearing

SAWS—VARIETY
Dodds Tilting Table, Motor Driven
Pettingell, Tilt Arbor, Roller Table, M.D.
Tannewitz, Tilting Table, motor driven

TENONERS
American, Single End, Tenon Heads, Motor Driven.
McKnight No. 71C Chair Back Tenoner, M.D.
Tewsley Single End, Tenon heads, lower cope, cut off saw, motor driven

VENEER MACHINERY
Dennis Taping Machine, motor driven
Dennis Continuous Feed Veneer Jointer, mtr. driven
Jenkins-Falls Veneer Jointer, B.B., motor driven

MISCELLANEOUS
Autonailer, Floor Type, Direct Motor Driven, Ballbearing.
Bell No. 13 Dovetail Gluer.
Black Bros. 12" Edge Glue Spreader, motor driven.
Zoller Power Mitre Chopper, motor driven
Fay & Egan No. 253, Automatic Knife Grinder, 30"
Sturtevant 36" B.B. Blower M.D. B.D.

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CONSISTING OF

L. G. McKnight Combination Boring and Trimming Machine, 9 A.C. Motors
Yates American Moulder, 5 A.C. Motors
Hermance Moulder, 15 HP A.C. Motor
Fay & Egan No. 776 Lightning 6" Moulder
Wysong-Miles Mortiser, A.C.M.P.
Jenkins Round and Square Post Mortise Machine
L. G. McKnight Mortiser, A.C. M.D.
Jenkins & G. M. Diehl No. 60 Tongue and Groove Jointer, 3 A.C. Motors
Baxter D. Whitney Double Head 36" Planer 2-15 HP A.C. Motors
3 Baxter D. Whitney 30" Planers—Porter 24" Planer—Self-feeding attachment
Onsrud & Porter Electric & Air Routers
Glue Clamp Carrier Systems
American 12' Heavy Duty Quick Change Lathe 18" Swing, Serial No. 34892
Bradford 6' Quick Change Lathe, 15" Swing
Yates No. 282 Band Rip Saws, 15 HP A.C. Motors
Defiance Chain Feed Rip, & Edger Saw Gang Rip Saw HP Motor
24 assorted, Band-Rip, Swing, Table, Cut off, Bench, and Trim Saws
Baxter D. Whitney Automatic Double Spindle Shapers
12 assorted Onsrud, Smith & Baxter D. Whitney Shapers
24 assorted Drum, Single Spindle, Bed, Leg, and Post Sanders
Tenoners - Scivers - Stickers - Surfacers Rail Machines - Routers - Leveling Machines - Lathes - Jointers - Boring Machines - Dowel & DaDo Machines-Bending & Spray Rooms - Compressors - Glue Room, etc.
Owen Universal Milling Machine, Serial No. 1323
Cincinnati Cutter Tool Grinder with accessories

EQUIPMENT—Frequency Changers—½ H.P. to 50 H.P. Motors, Kiln Trucks, Saw Blades, Knives, Cutters, Spray Equipment, Small Tools, Motored Blowers, Fans & Complete Factory Equipment
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BORERS—Horizontal & Vertical
Towsley No. 3—2 Spl. Horiz. Radial Borer
Greenlee No. 368—30" Mult. Horiz. Borer.
* Oliver No. 71 horizontal elec. borer
Andrew 48" & 72" Mult. Horiz. Borer.
* Wysong & Miles No. 283-B Vert. Sgl. Spl. Borer.
* Greenlee No. 369—48" Vert. Mult. Borer.
Nash chair seat angular borer.

CLAMPING MACHINERY
Taylor 40 Section 78" Revolving Clamp Carrier.
NEW Union Hand and Air Operated Revolving Case Clamps
Handy No. 447 Air Operated, 2-Way End Clamp.

GLUE MIXERS & SPREADERS
Francis M-7 (75 gallons) Veg. Glue Mixer.
Union 36" and 60" Dbl. Roll Resin Glue Spreaders.
Phenolite 52" Dbl. Roll Resin Glue Spreader.

JOINTERS
Moak 16" Hand Jointer, DMD.
* Yates-American No. 213 Glue Jointer.
* Jenkins No. 3-CD Glue Jointer.

LATHES
Mattison No. 57-D Auto. Turning Lathe, BB.

MORTISERS
* NEW Crescent Vert. Hollow Chisel Mortiser.
* Wysong & Miles automatic hydraulic hollow chisel mortiser.
Greenlee No. 228 Auto. Hollow Chisel Mortiser.
New Britain No. 2 Chain Saw Mortiser.

MOULDERS
* Yates-American Type C-99—10" Electric Moulder.
* Woods No. 132-M—10" Electric Moulder.
Woods No. 132—10" BB Belt Dr. Moulder.
Yates C3A-4" bb belt drive moulder

PLANERS—Facing
* Oliver 36" Straight-O-Plane.
* Porter No. 300—30" Facing Planer.

PLANERS
* Crescent No. P24—24" single planer
Fay & Egan No. 156 24" single planer, BB.
* Whitney No. 29—36" Single Planer.
Whitney BB 30" Double Planer.
* Whitney No. 24—40" Double Planer.
* Whitney No. 32—40" Heavy Duty Dbl. Planer.
Yates-American No. 177-30" heavy duty dbl. planer
* Buss No. 55—30" roughing planer
American No. 49—30" roughing planer.

PLANERS & MATCHERS
Triumph 24" Planer, Matcher, Moulder, B.B.
Sherman twin type end matchers.

ROUTERS
Porter No. 600 heavy duty elec. router.
Onsrud W-245 Electric Router.

DRUM SANDERS
Yates No. 431—31"—43" 3-Dr. End Bed Mtrzd.
* Solem S-3-M—73" 3-Drum Endless Bed Sander.
Berlin 31" Six Drum Sander.

SANDERS—Belt & Miscellaneous
* Curtis 8-V Semi-Auto. Belt Sander.
Mattison No. 124 Auto. Stroke Sander.
* Wysong & Miles No. 375 Hand Block Sander.
* Ekstrom-Carlson No. 18 Pneumatic drum Sander.
* Oliver 15" Single Disc Sander.
Nash No. 10 & No. 25 Auto. Spindle Sanders.
* Oakley Model H drawer sander.

SAWS—Band Scroll & Resaws
* NEW Crescent 20" Band Scroll Saws.
* American B-36" band saw..
* Tannewitz Type RHE-42" Band Scroll Saw.
Porter No. 85—18" Band Saw
Yates (Berlin) No. 283—44" band resaw.

SAWS—Cut-Off
Porter 43-208 straight line cut-off saw.
Bell No. 216 straight line cut-off saw.
* Fay & Egan No. 700 Straight Line Cut-Off Saw.
* Yates-American No. 5 Swing Saw.
* DeWalt Radial Arm Saws—large selection.
* Jenkins No. 105-A Dbl. Cut-Off and Mitre Saws

SAWS—Rip
* Diehl No. 75 straight line ripsaw.
* Mattison No. 205 straight line ripsaw.
* Yates-American Type G-67 Straight Line Ripsaw.
* Fay & Egan No. 386 Chain Feed Ripsaw
Yates G-2 Chain Feed Ripsaw, Mtzd.
Smith No. 335 Self-Feed Ripsaw.

VARIETY SAWS
NEW Delta Tilting Arbor Variety Saw.
* Yates-American No. 1 Tilt Table Variety Saw.
* Moak No. 16-A Tilt Table Variety Saw.
Baker Dbl. Arbor Variety Saw, BB.

SHAPERS
NEW Crescent No. S-2 Single Spindle Shaper.
Porter No. 103 Single Spindle Shaper, BMD.
Porter No. 201 Double Spindle Shaper, BMD.
* Whitney No. 250 Double Spindle Shaper.
* Whitney No. 134 Double Spindle Shaper.
* Greenlee No. 180 Double Spindle Shaper.
* Whitney No. 293 automatic single spindle shaper.

TENONERS
H. B. Smith Single End Tenoner
Fay & Egan No. 2 Single End Tenoner.
Wilkin-Challoner No. 50 Dbl. End Tenoner, BB.

VENEER EQUIPMENT
Capital 213" veneer clipper.
Francis 30"x72" and 36"x84" Hyd. Veneer Presses
Merritt 84x54—8—10—12 Plate Redriers.
Plycor (Fritz) Tapeless Splicer.
Large quantity of 30 and 36" "T" Beams.

MISCELLANEOUS MACHINES
NEW Hanchett No. 133 Auto. Band Resaw Sharpener
Hanchett No. 928 Auto, Circular Saw Sharpener.
Hanchett No. 207 auto. band resaw sharpener.
Wysong & Miles No. 290 Auto, Dovetailer.
Dodds 10—12—20—Spindle Dovetailers.
Loeffler Horiz. Mult., Spindle Groover.
Bell No. 50-A Rod Dowel Machine.
Hawker No. 2 Rod Dowel Machine.
Whitney 26" Wood Scraper with Grinder.
Food Machinery Co. 20 Track Cheese Box Nailer.

This is only a partial list. If the machine you want is not shown, write us.

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565 WEST WASHINGTON BOULEVARD CHICAGO 6, ILL. RAndolph 6-4970

SUTTON GUARANTEED

BORERS

Greenlee No. 356 motor-driven single-spindle vertical borer.
Single-spindle Fay & Egan No. 1 vertical borer.
Multiple-spindle vertical Fay & Egan borer.
Andrew vertical gang borer.
Andrews Horiz. Multi. Borer mtr. dr. pwr. fd.
Greenlee 369 Vertical Multi. Borer pwr. fd. b.b.
American No. 2½ single-spindle horizontal boring machine.

CLAMPS

Handy No. 103 frame clamp.
Taylor revolving clamp carrier, 40-sections.
High Point drawer clamp.
New Union Air Operated Revolving Case Clamp
Handy Revolving Case Clamp

DOVETAILERS

One 12-spindle Dodds dovetailer.
Pair 12-spindle Dodds dovetailers: Each equipped with Teague automatic feed for doing fronts, backs and sides. With motors.
Pair 25-spindle Dodds dovetailers with Teague automatic feed.
Wysong & Miles No. 290 Auto. Dovetailer & Lock Corner Machine

FANS

48" double ball bearing shaving exhaust fan
60" ball bearing ventilating fan

GLUE SPREADERS

New Union 54-in. No. 31 double rubber roll resin glue spreader.
Practically new Black Bros. 12-in. motor-dr. edge glue spreader.
Francis 72-in. and 84-in. No. 290 plate glue spreader.
New Union conveyorized edge glue spreader for resin glue.

GRINDING ROOM EQUIPMENT

American No. 9 automatic knife grinder.

JOINTERS

Diehl No. 60 direct motor-driven glue jointer.
Yates No. 213 direct motor-driven glue jointer.

LATHES

Yates 42-in. No. 74 automatic lathe ball-bearing.
Mattison 42-in. No. 57-D with motor.

MORTISERS

Wysong & Miles No. 288 Multiple Spdle. Mortiser
Wysong & Miles No. 286 hinge seat mortiser.
Greenlee single-spindle vertical mortiser.

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DRYING WOOD

Special processes of drying wood faster than the conventional methods of air seasoning and kiln drying, are already used on a limited commercial scale and probably will find wider application in the future, Harold N. Tombach, research director of the Lane Company, Inc., Altavista, Va., told the 1950 annual meeting of The American Society of Mechanical Engineers in New York recently.

The special methods Mr. Tombach discussed were vacuum seasoning, drying with super-heated steam, vapor drying, boiling-in-oil, drying with infra-red rays, dielectric heating and solvent seasoning.

"The slowness and relative expensiveness of the conventional methods of drying wood have always been of major concern to the woodworking industry," he said. "A considerable amount of thought has been spent on inventing new processess, with the chief aim of expedient drying in mind.

"The success of these special methods has often been hampered by either one or both of the following facts: speedy drying has resulted in poorer seasoning quality; intricate equipment has made the process too expensive for general application.

"Among the items making up the account of any drying process, there are some where conventional kiln-drying is hard to beat," Mr. Tombach pointed out. "This is the case in regard to cost of unit of heat generated and of drying medium employed, since in kiln-drying usually cheap steam and air at no cost are used. Also in most cases, special methods require more expensive equipment.

"However, there are other cost items where special methods have some chance to compete with their well established rival. One obvious one is reduced interest on capital invested in lumber, because of more rapid turnover. Also in some cases, labor cost and degrade of the seasoned wood may be reduced.

"Further, again because of more rapid turnover, amortization cost of the drying equipment may be lower. Finally it is conceivable that some savings could be accomplished through reduction of the amount of unprofitable heat losses, which are rather high with conventional kilns."

Tests made by Mr. Tombach showed that boiling-in-oil gives "relatively good results" when the moisture reduction is limited, that is, the wood either is dried from the green state to a moisture above the fibre saturation point, or from a moisture content below the fibre saturation point to any final moisture content. It is very likely that analagous results are found with vapor drying, he said.

Pervious woods which permit rapid movements of liquids and vapors through the coarse capillary structure obviously give best results with any method, Mr. Tombach stated, adding that no successful means has yet been devised to obtain the same results with refractory woods.

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METAL DRAWER SUPPORT TO INFLUENCE CABINET CONSTRUCTION

The new device is known as the "New Standard" Extension Drawer Support and is the product of the Extension Drawer Support Company, 3727 Broadway Place, Los Angeles 7, California.

This piece of hardware is of special interest in the fields of cabinet making, furniture, millwork, store fixtures, trailers and all other industries concerned with wooden drawer fabrication.

The new drawer support consists of four right-angle pieces of metal, two to each drawer side. Two of the pieces, known as the "tracks," are screwed into the side of the case in a stationary position. The remaining two pieces, the "support angles," are fitted into the stationary pieces. The drawer is laid into the "cradle" formed by the "support angles," and slides without the slightest tendency to bind. No screws are involved except those used to install the stationary "tracks," thus insuring low labor cost.

Here are a few of the advantages that the manufacturer claims:

Drawers can be opened fully. Drawer backs can be pulled out even with the front of the case or cabinet without the slightest danger of their falling, thus permitting full vision and use of the drawer.

The new support eliminates the need for old style center or side guides. They're guaranteed not to bind and tests prove you can push a 48-inch drawer closed when fully opened with one finger at one corner and without causing any binding action.

Framing of cases and cabinets is no longer necessary with this support, saving labor and material costs to assist in off-setting the cost of the hardware.

Three-quarters of an inch to two inches is added to the height of drawers because of the elimination of framing, or cross bars, thus adding considerably more drawer space in the same size case.

Drawers can be lifted free for cleaning purposes when pulled to their most open position.

Safety factor is offered because drawers will not pull out and fall from case, a big advantage, for example, where school children are concerned, or for silver and cutlery drawers.

There are various support sizes to accommodate drawers ranging in depth from 7½ inches to 33 inches.

For further information write to Dept. WD, Extension Drawer Support Co., 3727 Broadway Pl., Los Angeles 7, Calif.

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Mattison No. 207 Feed BB DMD Rip Saw
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Greenlee No. 495 Tilting Arbor Trim Saw
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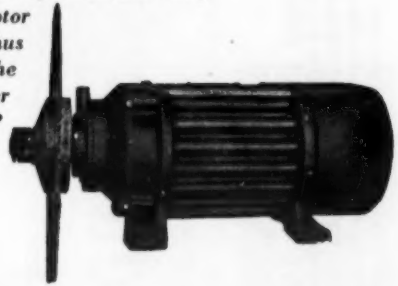

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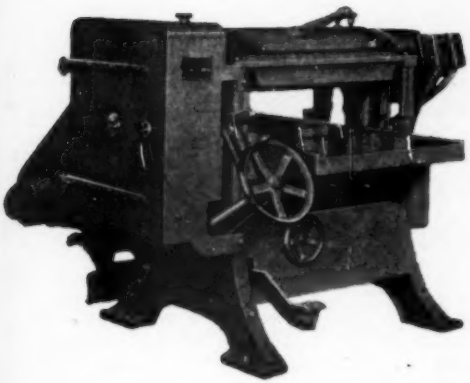

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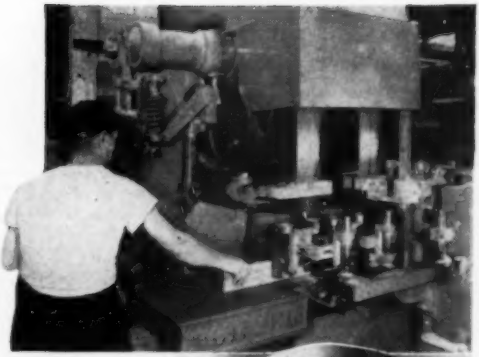

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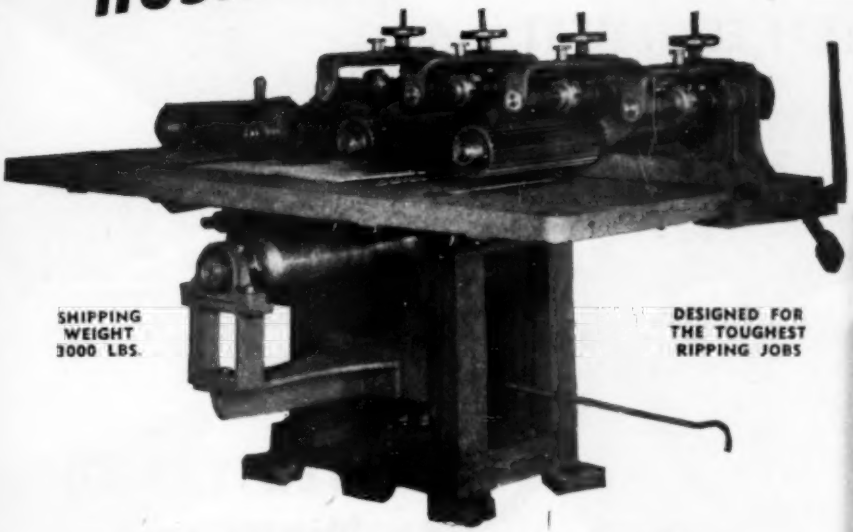

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